



ZARNAS

HEALTH, SAFETY AND
ENVIRONMENTAL
POLICIES AND PROCEDURES

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Revision Date: 10/2016



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ABRASIVE BLASTING/SANDBLASTING

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ABRASIVE BLASTING/SANDBLASTING

1.1 PURPOSE

- 1.1.1 The purpose of this policy is to provide both requirements and guidelines for safe abrasive blasting operations. This policy covers written procedures, operator training and equipment standards required for safe, productive blasting operations.

1.2 RESPONSIBILITIES

1.2.1 Supervisor

- 1.2.1.1 Ensure that the initial determination for potential abrasive blasting or particulate exposure has been accomplished before work begins
- 1.2.1.2 Supervise safe performance of work in accordance with related work practices
- 1.2.1.3 Assign jobs only to qualified employees

1.2.2 Employee

- 1.2.2.1 Be familiar with the safe operating functions of blasting equipment
- 1.2.2.2 Use the protective and safety equipment as assigned and directed
- 1.2.2.3 Abides by the requirements of this and site specific work practices
- 1.2.2.4 Comply with all company procedures
- 1.2.2.5 Have knowledge of hazards associated with respirable silica

1.2.3 Safety director

- 1.2.3.1 Authority to make necessary decisions to ensure success of the program and to amend these instructions or halt any operation where there is danger of serious personal injury

1.3 EXPOSURE

- 1.3.1 Abrasive blasting involves forcefully projecting a stream of abrasive particles onto a surface, usually with compressed air or steam. Because silica sand is commonly used in this process, workers who perform abrasive blasting are often known as sandblasters.
- 1.3.2 Work operations in which particulate or abrasive blasting materials may be encountered involve welding, burning, cutting, brazing, grinding and abrasive blasting sanding and drilling work.
- 1.3.3 The equipment and materials used to accomplish work operations are those normally associated with sandblasting and painting operations.

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- 1.3.4 Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations, the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources must be considered in making an evaluation of the potential health hazards.
- 1.3.5 The hazards involved in abrasive blasting include the material that is being removed and the surface from which the material is being removed. Lead is an example of a hazardous material being removed, while exposure to silica comes from using sand and other silica-producing materials in the blasting process. Both of these materials involve inhalation hazards.
- 1.3.6 Other exposure risk is flying debris to the eyes, face and any other exposed skin.

1.4 TOXIC DUSTS

- 1.4.1 Obtain positive documentation on materials/ingredients or remove sample(s) and conduct lab analysis of materials. This will be done before materials are shipped from a jobsite or before any onsite blasting is initiated. Identification should be coordinated with the client.
- 1.4.2 The composition and toxicity of the dust created during blasting operations will be considered in making an evaluation of the potential health hazards.

Potential Air Contaminants Associated with Abrasive Blasting	
Source	Potential Air Contaminants
Base Material - steel, aluminum, stainless steel, galvanized steel, copper-nickel and other copper alloys	Aluminum, cadmium, chromium, copper, iron, lead, manganese, nickel and zinc
Surface Coatings - pre-construction primers, anticorrosive and antifouling paints	Copper, barium, cadmium, chromium, lead, tributyl tin compounds, zinc
Abrasive Blasting Media - coal slag, copper slag, nickel slag, glass, steel grit, garnet, silica sand, soda	Arsenic, beryllium, amorphous silica, cadmium, chromium, cobalt, crystalline silica, lead, manganese, nickel, silver, titanium and vanadium

- 1.4.3 Sometimes the dust that is formed from abrasive blasting can be flammable or explosive. This can involve obvious hazards of fire and explosion. Organic abrasives which are combustible will be used only in automatic systems. Where flammable or explosive dust mixtures may be present, the construction of the equipment, including the exhaust system and all electric wiring, will conform to the OSHA and ANSI requirements.
- 1.4.4 Where there is potential for flammable or explosive dust mixtures, the blast nozzle will be bonded and grounded to prevent the buildup of static charges. Organic abrasives will be used only in automatic systems.
- 1.4.5 Where flammable or explosive dust mixtures may be present, the abrasive blasting enclosure, the ducts and the dust collector will be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following NFPA standards.

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- 1.4.6 Dust will not be permitted to accumulate on the floor or on ledges outside the blast enclosure. Dust, shot and other abrasives will be cleaned up promptly to prevent slipping hazards.
- 1.4.7 Review blasting methods and materials then select the proper respiratory protection for the anticipated hazards. Use a NIOSH approved type C or CE supplied air respirator for abrasive blasting. Follow ZARNAS COMPANIES' *Respiratory Protection* policy for other tasks and for safe respirator use.
- 1.4.8 Grit materials to be used will be identified and the appropriate SDS of the grit reviewed. Elements in the SDS will be included in the activity plan and reviewed with all involved team members.

1.5 GENERAL SAFETY

- 1.5.1 ZARNAS COMPANIES will review and evaluate this standard practice instruction in accordance with the following:
 - 1.5.1.1 On an annual basis
 - 1.5.1.2 When changes occur to governing regulatory sources that require revision
 - 1.5.1.3 When changes occur to related company procedures that require a revision
 - 1.5.1.4 When facility operational changes occur that require a revision
 - 1.5.1.5 When there is an accident or close-call that relates to this area of safety
 - 1.5.1.6 Anytime the procedures fail
- 1.5.2 ZARNAS COMPANIES will evaluate our facility or host employer facilities to determine if any work area meets the criteria for designation as an abrasive blasting hazard area. Such areas will be fully evaluated for safety and compliance with respective safety regulations.
- 1.5.3 ZARNAS COMPANIES will implement our confined space program when performing work in areas designated as a confined space.
- 1.5.4 Effective implementation of this program requires support from all levels of management. This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of the number of workers employed or the number of work shifts. It is designed to establish clear goals and objectives.
- 1.5.5 Abrasive blasting applies to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure or by centrifugal force. An abrasive is a solid substance used in an abrasive blasting operation. Sandblasting is a type of abrasive blasting.
- 1.5.6 Before work begins the subcontractor must submit a written safety plan to include all recognized hazards and assign a knowledgeable person trained to recognize hazards associated with the work and with the authority to quickly take corrective action to eliminate them.
- 1.5.7 All machinery, equipment, PPE or other resources will be inspected prior to use and as per manufacturer instructions.

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- 1.5.8 Methods for effective communications will be established prior to work beginning.
- 1.5.9 Whenever hazardous substances such as dusts, fumes, mists, vapors or gases exist or are produced in the course of construction work, their concentrations will not exceed the limits specified in the "Threshold Limit Values of Airborne Contaminants - 1970" of the American Conference of Governmental Industrial Hygienists.
- 1.5.10 Abrasive blasting respirators will be worn by all abrasive blasters. The company respiratory protection program will be followed when respiratory protective equipment, including blasting hoods/helmets, is required.
- 1.5.11 In addition to respiratory protection, adequate PPE and other resources will be provided to ensure personnel have required protection for the hearing, eyes, face and body of the operator.
- 1.5.12 Risk assessment for personnel working in the vicinity of abrasive blasting operations will be completed and any adequate PPE for the eyes, ears, face and body must be provided.
- 1.5.13 During post abrasive blasting cleanup operation compressed air will not be used unless verification has been made that the compressed air pressure has been reduced to less than 30 psi.

1.6 CONTROLS

- 1.6.1 Protection can be implemented through engineering controls, administrative controls, safe work practices and last but not least, personal protective equipment. One form of engineering control is to find an alternative to abrasive blasting.
- 1.6.2 Engineering controls will include but are not limited to:
 - 1.6.2.1 General exhaust ventilation systems
 - 1.6.2.2 Local ventilation systems
 - 1.6.2.3 Dust collection systems
 - 1.6.2.4 Enclosed cabs for workers
 - 1.6.2.5 Water sprays for dust reduction
 - 1.6.2.6 Wet drilling when drilling operations are in effect
 - 1.6.2.7 Drill platform skirts when drilling operations are in effect
- 1.6.3 Administrative controls will include but are not limited to:
 - 1.6.3.1 Job specific training programs
 - 1.6.3.2 Job rotation
 - 1.6.3.3 Job enlargement
 - 1.6.3.4 Job pacing variations

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- 1.6.3.5 Checklists for job improvement
- 1.6.3.6 Policies and procedure development
- 1.6.3.7 Regular job inspections and review
- 1.6.3.8 Employee feedback surveys
- 1.6.4 Use a less toxic abrasive blasting material. Substituting less toxic abrasive materials for the traditional high-silica-containing abrasive is becoming more common. Even with a low silica content abrasive (less than 1 percent free silica), work in containment structures or in confined spaces may result in hazardous exposures.
- 1.6.5 Over-coating is the application of a new coating on top of existing coatings.
- 1.6.6 Chemical stripping involves spraying an alkaline chemical on the painted surface, allowing it to react and then scraping the decomposed paint and excess caustic from the steel surface.
- 1.6.7 Wet methods have been used to reduce dustiness associated with lead-based paint removal projects. Both high pressure water alone and water mixed with abrasive have been used. Use abrasives that can be delivered with water (slurry) to reduce dust.
- 1.6.8 Power tools can be used to sand, scrape, or chip coatings from steel structures. However, the need to apply power tools firmly against the surface at all times can create worker fatigue and musculoskeletal hazards, and some tools may not be able to clean irregular surfaces.
- 1.6.9 Use barriers and curtain walls to isolate the work area.
- 1.6.10 Use blast areas or blast cabinets for smaller operations.
- 1.6.11 Use restricted areas for non-enclosed blasting operations.
- 1.6.12 Keep coworkers away from blasting areas.
- 1.6.13 The concentration of respirable dust, fumes, mists, vapors or gases exist or are produced in the course of construction work and their concentrations will not exceed the limits specified in 1926.55(a). When ventilation is used as an engineering control method, the system will be installed and operated according to the requirements of this section.
- 1.6.14 Use exhaust ventilation systems in containment structures to capture dust.
- 1.6.15 Use HEPA filters on vacuums or wet methods to minimize accumulation of toxic dust.
- 1.6.16 Ventilation plays an important role in abrasive blasting. Often, the area where blasting is performed is contained and ventilation supplied to remove contaminated air and usher in fresh air.
- 1.6.17 All containment structures should be ventilated to maintain a continuous airflow and prevent any leakage of dust to the outside. Exhaust air should be discharged to the outside through an appropriate opening. Blowers should be set up so that accumulated dust can be removed without contaminating work areas and dust collectors will be utilized as required.

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- 1.6.18 If heaters are used, especially in a contained area, ventilation is needed to avoid buildup of combustible particles that may be ignited by the heater.
- 1.6.19 Compressed air is never to be used for cleaning.
- 1.6.20 Avoid blasting in windy conditions.
- 1.6.21 Air monitoring should be planned for and accomplished for those activities which involve known/suspected hazards (ex. lead, silica, PCB, etc.), unless it can be substantiated with similar operations which we have monitoring results on file for. Atmospheric testing for abrasive blasting hazard areas is required for two distinct purposes. Evaluation of the hazards of the work area and verification that acceptable particulate levels exist in that area.
- 1.6.22 Those work areas meeting the criteria for delineation as an abrasive blasting hazard work area will be restricted only to trained and authorized employees. Physical barriers, ropes, fencing or any other equally effective means of entry control may be used to control entry.
- 1.6.23 As much of blasting as possible should be done in a specified location, a blasting zone (where dust is visible) should be established and marked off with signs around the perimeter of the area such as:

CAUTION
Abrasive Blasting Area
Eye, Ear and Respiratory Protection Must Be Worn

- 1.6.24 Blasting should not be done when wind direction and velocity carry visible dust to people unprotected by proper respirators.
- 1.6.25 Blasting of small objects should be done in an enclosure which is designed to specifically reduce the dust hazards.

1.7 MECHANICAL PRECAUTIONS AND PROCEDURES

- 1.7.1 Machines and hoses should be inspected frequently and all parts showing excessive wear should be repaired or replaced.
- 1.7.2 Nozzles should be externally attached to the hose by a fitting, which will prevent accidental disengagement.
- 1.7.3 Blast cleaning nozzles will be equipped with an operating valve which must be held open manually. A support (or *deadman*) will be provided on which the nozzle may be mounted when it is not in use. An electric deadman will be low voltage (12 volt DC) and have continuous wire or plug connections.
- 1.7.4 Lengths of hose should be joined by external metallic connectors. The connectors will have pin-clips to prevent disengagement. Anti-whip arresters may be used between each connector.
- 1.7.5 All bull hoses, from the compressor to the abrasive blast pot, will have pin-clips and anti-whip arresters on each end.
- 1.7.6 In abrasive blasting situations where flammable or explosive dust mixtures may be present, construction of equipment and any exhaust system, including all electric wiring, will conform to

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- American National Standard Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying, Z33.1-1961 (NFPA 91-1961), as well as 1926 Subpart S.
- 1.7.7 Prior to operation where flammable or explosive dust mixtures may exist, confirm that the blast nozzle is bonded and grounded to prevent the buildup of static charges.
 - 1.7.8 Where flammable or explosive dust mixtures may be present, confirm that the abrasive blasting enclosure, ducts and the dust collector are constructed with loose panels or explosion venting areas, located on sides away from any occupied area. These areas will provide pressure relief in the event of an explosion.
 - 1.7.9 Compressed air can only be used for cleaning objects and materials when the pressure is reduced to less than 30 psi and effective chip guarding and PPE are utilized.
 - 1.7.10 The pressure vessel built in accordance with ASME codes allows a maximum operating pressure of 150 psi for Marco blast pots.
 - 1.7.11 At no time will compressed air be used for cleaning clothes while being worn or directly applied to any part of the body.
 - 1.7.12 Couplings will be secured per OSHA regulations. The blaster will be responsible to ensure that each coupling is correctly secured where possible, whip checks will be installed.
 - 1.7.13 Replace all OEM furnished scheduled 40 pipes with schedule 80 on Marco blast pot exhaust valve assembly.

1.8 PERSONAL PROTECTIVE EQUIPMENT

- 1.8.1 Personnel must be equipped with the appropriate protective safety equipment. PPE will be appropriate for the particular hazard.
- 1.8.2 PPE will be maintained in good condition.
- 1.8.3 PPE will be properly stored when not in use, to prevent damage or loss.
- 1.8.4 PPE will be kept clean, fully functional and sanitary.
- 1.8.5 Operators should be equipped with heavy canvas or leather gloves and aprons.
- 1.8.6 Safety shoes must be worn.
- 1.8.7 Eye, face, hearing and respiratory protection will be supplied to all personnel working with or around abrasive blasting operations.
 - 1.8.7.1 Equipment for protection of the eyes and face shall be supplied to the operator when the respirator design does not provide such protection.
- 1.8.8 Precautions will be taken to protect personnel in the blasting zone including the blasting operator from excessive noise exposure by supplying and requiring the use of earplugs or muffs.



- 1.8.9 Vortex tubes that cool the air supply to the blasters hood will be considered depending on season and exposure of the employee to heat sources.
- 1.8.10 Eye and face protection will be supplied to any other personnel working in the vicinity of abrasive blasting operations.

1.9 RESPIRATORY PROTECTION

- 1.9.1 A respiratory protection program will be established wherever it is necessary to use respiratory protective equipment including worksite specific procedures and elements for required respirator use. Abrasive blasting respirators will be worn by all abrasive blasting operators under certain conditions. All use of respirators or other respiratory protective equipment will be in accordance with the company *Respiratory Protection Policy*.
- 1.9.2 Employees required to don or attempt to use a respirator must undergo proper medical evaluation, fit test and training in the proper selection, use, maintenance and storage of the specific respirator and is individually authorized by ZARNAS COMPANIES for wearing a respirator in the scope and course of work.
- 1.9.3 During construction and pipeline maintenance operations overall and abrasive blasting specifically as per this program, special safety and health considerations will be given whenever hazardous dusts, fumes, mists, vapors, gases or other substances either exist or are produced in the course of work. Concentrations of any such exposure will not exceed the limits specified in 1926.55(a).
- 1.9.4 All abrasive blasting respirators must cover the wearer's head, neck and shoulders to protect the wearer from rebounding abrasive. Workers must use only Type CE NIOSH certified blasting airline respirators with positive pressure blasting helmets. Air for abrasive blasting respirators must be free of harmful quantities of dusts, mists or noxious gases.
- 1.9.5 Apron and dust collar, properly fitted and properly worn, will be used by all persons blasting. In addition to the hood, blasters should also wear a disposable respirator when working in a high dust concentration. This would provide protection when the blasting operation has ceased and the blaster is removing the air supplied equipment or when merely taking a break.
- 1.9.6 Abrasive blasting hoods will be worn by all abrasive blasting operators
 - 1.9.6.1 When working inside of blast clean rooms
 - 1.9.6.2 When using silica sand in manual blasting operations where the nozzle and blast are not physically separated from the operator in an exhaust ventilated enclosure
 - 1.9.6.3 Where concentrations of toxic dust dispersed by the abrasive blasting may exceed the limits set in 1926.55 or other pertinent sections of this part and the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure
- 1.9.7 In situations where the abrasives and the surface coatings on the materials blasted become shattered and pulverized during blasting operations, the dust formed by this work will contain particles of a size that can be breathed (respirable size).

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- 1.9.8 Concentration of respirable dust or fume in the abrasive blasting operator's breathing zone will be kept below permissible exposure limits as required by OSHA. The same consideration will be given regarding exposure of any other worker in the area to this respirable dust.
- 1.9.9 Particulate filter respirators, commonly referred to as dust-filter respirators, properly fitted, may be used for short, intermittent or occasional dust exposure such as clean-up, dumping of dust collectors or unloading shipments of sand at a receiving point, when it is not feasible to control the dust by enclosure, exhaust ventilation or other means. Respirators used will be certified for protection against the specific type of dust.
 - 1.9.9.1 Dust filter respirators may be used to protect the operator of outside abrasive blasting operations where non-silica abrasives are used on materials having low toxicities.
 - 1.9.9.2 Dust filter respirators will not be used for continuous protection where silica sand is used as the blasting abrasive or toxic materials are blasted.
- 1.9.10 Support personnel involved with cleanup and other related activities may need respiratory protection.

1.10 INSPECTIONS

- 1.10.1 Inspections must always be conducted on interim safety cable device installed on 2008 Marco blast pots, remote automated depressurization system integrated on 2008 Marco blast pots, installation of operator and safety label information on Marco blast pots.
- 1.10.2 Blast hose should be visually inspected.
- 1.10.3 If a bull hose has a blister it must be taken out of service and repaired or discarded.
- 1.10.4 Blast hose couplings must be examined for wear or damage. Any coupling that is either worn or damaged must be removed and discarded.
- 1.10.5 Blast hose coupling gaskets must be inspected prior to each connection and replaced if worn, distorted, or soft.
- 1.10.6 Blast pots are to be visually inspected periodically for abnormal wear and to ensure that all parts are operating satisfactorily. All blast pots must maintain a valid certification. This certification process may be required as often as every two years, depending on the area of operation.
- 1.10.7 Abrasive blasting equipment will not be modified in any way.
- 1.10.8 Blast hose remote control cables and deadman switches must be visually traced to ensure they are connected to the correct blast pot and verified before putting into service.

1.11 HOUSEKEEPING

- 1.11.1 Personnel must use proper hygiene practices while in hazardous areas and remain fully protected at all times in the work area. Before leaving work areas, ensure protective clothing is removed, properly stored in a controlled area and wash facilities used to remove any contaminants from exposed skin. Specific procedures and facilities established for personal hygiene will be covered in the activity plan and covered with all team members.

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- 1.11.2 Good housekeeping practices should be followed in abrasive blasting operation to prevent slips, trips and falls.
- 1.11.3 A facility should be available for blasters to wash hands routinely and before eating, drinking or smoking and after blasting operations.
- 1.11.4 Eating, drinking or the use of tobacco products is prohibited in the blasting area.
- 1.11.5 Park their cars where they will not be contaminated with silica and other substances such as lead.
- 1.11.6 Wash their hands and faces before eating, drinking or smoking. Vacuum or remove contaminated work clothes before eating, drinking or smoking.
- 1.11.7 Provide accommodations with separate storage facilities for street clothes, protective clothing and equipment. Keep contaminated clothing and equipment out of clean changing area. Shower before leaving the worksite.
- 1.11.8 Do not allow dust to accumulate on the floor or ledges outside of an abrasive blasting enclosure. Clean up dust spills in a prompt and consistent manner.
- 1.11.9 Keep walkways and aisles clear of abrasive blasting product such as steel shot or any other material that could cause a slipping hazard.

1.12 EMERGENCY FIRST AID PROCEDURES

- 1.12.1 In the event of an emergency, institute first aid procedures and send for first aid or medical assistance in accordance with local procedures.
- 1.12.2 Eye exposure - Wash immediately with large amount of water. Lifting the lower and upper lids occasionally, get medical attention as soon as possible.
- 1.12.3 Skin exposure (imbedded particulates) - Immediately flush with copious amounts of water. Remove any clothing blocking exposed skin areas and flush exposed skin areas, get medical attention as soon as possible.
- 1.12.4 Respiratory exposure - Get the victim to open, fresh air immediately. If breathing has stopped, perform CPR. Keep the victim warm and at rest. Get medical attention as soon as possible.
- 1.12.5 Move the affected person from the hazardous area. If the exposed person has been overcome, initiate local emergency notification procedures. Understand the facility's emergency rescue procedures and know locations of rescue equipment before the need arises.

1.13 MEDICAL SURVEILLANCE

- 1.13.1 The medical surveillance provisions are intended to provide our employees with a comprehensive approach to prevention of silicosis.
- 1.13.2 All medical examinations and procedures will be performed by or under the supervision of a licensed physician and are provided without cost to employees at a reasonable time and place.

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- 1.13.3 The employer will remove an employee from work having an exposure to abrasive blasting materials or particulates under the following conditions: exposure limit exceedance, evidence of silicosis or medical determination.
- 1.13.4 Any employee removed from exposure to abrasive blasting materials or particulates may return to former job status when approved by their healthcare provider. A written recommendation that the employee no longer has a detected medical condition which places the employee at increased risk of impairment of health will be required by this company before return to work is authorized.

1.14 DISPOSAL

- 1.14.1 Waste materials must be properly disposed of in accordance with state, federal and company requirements.
- 1.14.2 Identify contractually, before shipping, who is responsible for waste to be generated and plan accordingly for disposal.
- 1.14.3 Before shipping, a sample should be analyzed for positive identification and proper manifesting.
- 1.14.4 Whenever a manifest is generated, prior to shipment, the safety director will be notified.
- 1.14.5 When contractual agreements dictate, manifests should show the client as generator and responsible for proper manifesting, shipping and disposal.
- 1.14.6 If segregation of waste generated by job is necessary, proper controls must be in place to collect and contain waste in approved storage/shipping containers properly marked and labeled. (Contractual agreements should dictate).
- 1.14.7 Waste materials must be disposed of through one of ZARNAS COMPANIES's approved hazardous materials and waste disposal companies.

1.15 TRAINING

- 1.15.1 ZARNAS COMPANIES will determine whether training required for specific jobs will be conducted in a classroom or on-the-job. The degree of training provided will be determined by job complexity and the abrasive blasting exposure hazards associated with the individual job.
- 1.15.2 Initial training will be provided prior to job assignment and include training to ensure that the hazards associated with abrasive blasting are understood by employees and that the knowledge, skills and personal protective equipment required are acquired by employees.
- 1.15.3 Each authorized employee will receive training in the following:
 - 1.15.3.1 Recognition of applicable hazards involved with the particular job and jobsite, as well as the methods and means necessary for safe work
 - 1.15.3.2 Specific nature of operation, which may result in exposure to abrasive blasting materials
 - 1.15.3.3 Purpose, proper selection, fitting, use and limitation of PPE

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- 1.15.3.4 Adverse health effects associated with overexposure to abrasive blasting materials
- 1.15.3.5 Controls and work practices associated with the job assignment, including training of employees to follow relevant good work practices
- 1.15.3.6 Manufacturer's health and hazard information included on the SDSs required under OSHA's hazard communication standard
- 1.15.3.7 Employee's right of access to records under 29 CFR 1910.20
- 1.15.3.8 2008 *Marco Blast Pot* as identified
 - 1.15.3.8.1 Safety cable device
 - 1.15.3.8.2 Remote automated depressurization system
 - 1.15.3.8.3 ZARNAS COMPANIES blast pot operator training
- 1.15.4 Refresher training will be conducted on an annual basis.
- 1.15.5 Retraining will be provided for all affected employees as a minimum under the following conditions:
 - 1.15.5.1 Whenever there is a change in job assignments, PPE, change in equipment or processes that presents a new hazard
 - 1.15.5.2 Whenever their work takes them into hazardous areas
 - 1.15.5.3 Whenever there is a change in abrasive blasting safety procedures
 - 1.15.5.4 Whenever safety procedures fails resulting in a near miss, illness or injury
- 1.15.6 Additional retraining will also be conducted whenever a periodic inspection reveals or whenever this employer has reason to believe that there are deviations from or inadequacies in employee knowledge of known hazards or use of equipment or procedures.
- 1.15.7 ZARNAS COMPANIES will certify that employee training has been accomplished and is being kept up to date. The certification will contain a synopsis of the training conducted, employee's name and dates of training.

ASBESTOS AWARENESS

Revision Date: 05/2015



ASBESTOS AWARENESS

2.1 PURPOSE

2.1.1 The purpose of this policy is to advise employees in areas where asbestos is suspected on an awareness level about the properties and dangers of asbestos, general guidelines and training requirements and to provide basic precautions and protections for employees to avoid exposure to asbestos containing material (ACM) or presumed asbestos containing material (PACM).

2.2 SCOPE

2.2.1 This procedure applies to ZARNAS COMPANIES operations where employees whose work activities may be in the vicinity of asbestos containing materials during their work activities. When work is performed on a non-owned or operated site, the operator's program will take precedence, but this document covers ZARNAS COMPANIES employees and contractors and will be used on owned premises or when an operator's program does not exist or is less stringent.

2.3 RESPONSIBILITIES

2.3.1 Managers/Supervisors

2.3.1.1 Ensure owners or operators are notified of PACM.

2.3.1.2 Prohibit ZARNAS COMPANIES employees from working until material in question is confirmed as non-asbestos or abated.

2.3.1.3 Ensure proper employee asbestos awareness training is completed.

2.3.2 Employees

2.3.2.1 All employees are required to act in strict compliance with the requirements of this program and delay or discontinue work if there is ever an unresolved concern regarding exposure to asbestos.

2.3.2.2 Immediately report any suspected asbestos containing material to their supervisor.

2.4 HEALTH EFFECTS

2.4.1 The most dangerous exposure to asbestos is from inhaling airborne fibers. The body's defenses can trap and expel many of the particles. However, as the level of asbestos fibers increase many fibers bypass these defenses and become embedded in the lungs. The fibers are not broken down by the body and can remain in body tissue indefinitely. Exposure to asbestos has been shown to cause respiratory diseases such as lung cancer, asbestosis, mesothelioma and various types of cancer of the stomach and colon.

2.5 EXPOSURE

2.5.1 Asbestos materials are used in the manufacture of heat-resistant clothing, automotive brake and clutch linings, and a variety of building materials including insulation, soundproofing, floor tiles, roofing felts, ceiling tiles, asbestos-cement pipe and sheet and fire-resistant drywall. Asbestos is

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also present in pipe and boiler insulation materials, pipeline wrap and in sprayed-on materials located on beams, in crawlspaces, and between walls.

- 2.5.2 Client owned and/or operated equipment and facilities, where surfacing material or insulation is present, must be confirmed non-asbestos before ZARNAS COMPANIES employees disturb that material. Where surfacing material or insulation cannot be confirmed non-asbestos, the client or owner must test, and where necessary abate, the material before ZARNAS COMPANIES employees are permitted to work.

2.6 TYPES

- 2.6.1 Asbestos can be defined as friable or non-friable. Friable means that the material can be crumbled with hand pressure and is therefore likely to emit fibers. The fibrous or fluffy sprayed-on materials used for fireproofing, insulation, or sound proofing are considered to be friable and they readily release airborne fibers if disturbed.
- 2.6.2 Materials such as vinyl-asbestos floor tile or roofing felts are considered non-friable and generally do not emit airborne fibers unless subjected to sanding or sawing operations. Asbestos cement pipe or sheet can emit airborne fibers if the materials are cut, abraded or sawed, or if they are broken during demolition operations.

2.7 IDENTIFYING

- 2.7.1 There are many substances that workers contact that may contain asbestos and have the potential to release fibers. Only rarely can asbestos in a product be determined from labeling or by consulting the manufacture. The presence of asbestos cannot be confirmed visually in many cases. The only way to positively identify asbestos is through laboratory analysis of samples. If the presence of asbestos is suspected always assume that it is an asbestos containing material and have it analyzed.
- 2.7.2 Employees will abide warning signs and labels and will not disturb the ACM.
- 2.7.3 Signs and labels will identify the material which is present, its location and appropriate work practices which, if followed, will ensure that ACM and/or PACM will not be disturbed. ZARNAS COMPANIES will ensure employees working in and adjacent to regulated areas comprehend the warning signs.

2.8 GENERAL

- 2.8.1 Drilling, sawing or using nails on ACMs can release asbestos fibers and should be avoided.
- 2.8.2 Floor tiles, ceiling tiles or adhesives that contain asbestos should never be sanded.
- 2.8.3 Use care not to damage asbestos when moving furniture, ladders, or any other object.
- 2.8.4 Know where asbestos is located in your work area. Use common sense when working around products that contain asbestos. Avoid touching or disturbing asbestos materials on walls, ceilings, pipes, ducts or boilers.

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- 2.8.5 All asbestos containing materials should be checked periodically for damage or deterioration. Report any damage, change in condition or loose asbestos containing material to a supervisor.
- 2.8.6 All removal or repair work involving asbestos must be done by specially trained personnel.
- 2.8.7 Asbestos should always be handled wet to help prevent fibers from being released. If asbestos is soaked with water or a mixture of water and liquid detergent before it is handled, the fibers are too heavy to remain suspended in the air.
- 2.8.8 In the presence of asbestos dust above the PEL, the use of a respirator approved for asbestos work is required. A dust mask is not acceptable because asbestos fibers will pass through it.
- 2.8.9 Dusting, sweeping or vacuuming dry asbestos with a standard vacuum cleaner will put the fibers back into the air. A vacuum cleaner with a special high efficiency filter (HEPA) must be used to vacuum asbestos dust.
- 2.8.10 If a HEPA vacuum is not used clean-ups must be done with a wet cloth or mop. The only exception to this would be if the moisture presents an additional hazard such as around electricity.
- 2.8.11 The presence of asbestos itself does not create a health hazard unless the material is disturbed and releases fibers to the atmosphere. Protect yourself and others by being aware of where asbestos is located, the dangers involved and using common sense when working around ACM.

2.9 MULTIPLE WORKSITES

- 2.9.1 ZARNAS COMPANIES does not want our employees exposed by asbestos work being performed by other companies. When working on multi-contractor worksites ZARNAS COMPANIES employees will be protected from exposure. If employees working adjacent to Class I asbestos jobs are exposed to asbestos due to the inadequate containment of such jobs ZARNAS COMPANIES will either remove the employees from the area until the enclosure breach is repaired or perform an initial exposure assessment.

2.10 AIR MONITORING

- 2.10.1 Depending on the exposure level ZARNAS COMPANIES is required to perform air sampling.

2.11 MEDICAL SURVEILLANCE

- 2.11.1 All ZARNAS COMPANIES employees who are exposed to asbestos at the regulated level will be included in the ZARNAS COMPANIES medical surveillance program.

2.12 RESPIRATORY PROTECTION

- 2.12.1 The only circumstances that will necessitate ZARNAS COMPANIES employees using respiratory equipment for protection against asbestos is during the asbestos exposure assessment process, while confirming (via personnel monitoring) that the engineering controls and work practices designed and employed for a particular work activity are adequate to maintain exposure levels below the PEL/excursion limit. Asbestos work that requires respiratory equipment beyond the PEL should be performed by a qualified contractor.

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2.13 WASTE DISPOSAL

2.13.1 Asbestos waste, scrap, debris, bags, containers, equipment and contaminated clothing will be collected and disposed of in sealed, labeled impermeable bags of greater than 6 mils thickness or other closed, labeled, impermeable containers.

2.14 TRAINING

2.14.1 Asbestos awareness training is required for employees who work in areas that contain or may contain asbestos and ZARNAS COMPANIES will ensure the training is documented.

2.14.2 Asbestos awareness training is required for employees whose work activities may contact ACMs or PACMs but do not disturb the ACM or PACM during their work activities.

2.14.3 Subcontractors performing work will comply with the requirements of this standard and all applicable regulatory and environmental regulatory requirements.

Asbestos Abatement Program

GENERAL: G. C. Zarnas will ensure that Asbestos abatement jobs are conducted to comply with all federal, state, and local regulations. G.C. Zarnas will ensure that contract requirements are met and that employees performing abatement activities are protected from overexposure as well as other associated hazards.

RESPONSIBILITY: The Environmental Project Manager is responsible for the administration of this program. G. C. Zarnas has expressly authorized this person to halt any Company operation where there is danger of serious personal injury. Contract specifications may dictate additional requirements.

Contents of Asbestos Abatement Program

- 1.0 Written Program.
- 2.0 General Requirements.
- 3.0 Applicable Standards.
- 4.0 Notification.
- 5.0 Work Plan.
- 6.0 Environmental Issues.
- 7.0 Smoking Cessation Policy.
- 8.0 Administrative and Supervisory Personnel.
- 9.0 Worker Training and Education.
- 10.0 Decontamination Facilities.
- 11.0 Negative Pressure Enclosure System.
- 12.0 Negative Pressure System.
- 13.0 Pressure Differential Monitoring.
- 14.0 NESHAPS Asbestos Categories.
- 15.0 Removal of Asbestos Containing Material (ACM).
- 16.0 Methods of Compliance.
- 17.0 Specific Control Methods for Class I Work.
- 18.0 Specific Control Methods for Class II Work.
- 19.0 Specific Control Methods for Class III Work.
- 20.0 Specific Control Methods for Class IV Work.
- 21.0 Packaging Asbestos Waste for Disposal.
- 22.0 Disposal of Asbestos Containing Materials.
- 23.0 Work Area Cleanup Procedures.
- 24.0 Air Monitoring.
- 25.0 Demobilization.
- 26.0 Final Documentation.

- 1.0 WRITTEN PROGRAM.** G.C. Zarnas will review and evaluate this standard practice instruction on an annual basis, or when a change occurs that prompts revision of this document, or when site operational changes occur that require a revision of this document. The Asbestos Abatement Program is intended for use as the basis for specific project specifications used to describe the scope of work to be performed by G.C. Zarnas during an asbestos abatement operation in compliance with OSHA's Asbestos Standard, 29 CFR 1926.1101. This written program will be communicated to all personnel. It encompasses the all abatement worksites, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals, and objectives.
- 2.0 GENERAL REQUIREMENTS.** Once trained, foreman, with input from the site supervisor will be responsible. The use of appropriate engineering controls and work practices will be the primary procedures used by G.C. Zarnas to reduce worker exposure to airborne asbestos fibers. These procedures, both general and specific, are intended as guidelines for asbestos abatement operations based upon local, state and federal regulations and a comprehensive review of each project. Each point discussed may not always be applicable to every asbestos abatement project, and in these cases, the procedures outlined in this Program will vary with the project and/or specific regulatory agency requirements.
- 3.0 APPLICABLE STANDARDS.** General applicability of Codes and Regulations will be followed at all G.C. Zarnas projects. Except to the extent that more explicit or more stringent requirements are written directly into this Program, all applicable codes and regulations will have the same force and effect as if copied directly into this Program. In order to comply with all local, state and federal requirements, copies of all required documents, including appropriate EPA Guidelines and OSHA Standards, will be maintained at the job site. Specific documents required for employee information, will be posted in the Clean Room of the decontamination unit.
- 3.1 Federal Regulations:** Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials include, but are not limited to, the following:
- 3.1.1** U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), including but not limited to:
- Asbestos Standards for the Construction Industry, Title 29, Part 1926, Section 1101 of the Code of Federal Regulations
 - Respiratory Protection, Title 29, Part 1910, Section 134 of the

Code of Federal Regulations

- Construction Industry Standards, Title 29, Part 1926 of the Code of Federal Regulations
- Access to Employee Exposure & Medical Records, Title 29, Part 1910, Section 1020 of the Code of Federal Regulations
- Hazard Communication, Title 29, Part 1926, Section 59 of the Code of Federal Regulations
- Specifications for Accident Prevention Signs & Tags, Title 29, Part 1910, Section 145 and Part 1926, Section 200 of the Code of Federal Regulations

3.1.2 U.S. Department of Transportation (DOT), including but not limited to:

- Hazardous Substances, Title 29, Parts 171 and 172 of the Code of Federal Regulations

3.1.3 U.S. Environmental Protection Agency (EPA), including but not limited to:

- Worker Protection Rule, Title 40, Part 763, Subpart G of the Code of Federal Regulations
- Asbestos Hazard Emergency Response Act (AHERA), Title 40, Part 763, Subpart E of the Code of Federal Regulations
- Regulation for Asbestos, Title 40, Part 61, Subpart A of the Code of Federal Regulations
- National Emission Standards For Hazardous Air Pollutants (NESHAP), Title 40, Part 61, Subpart M of the Code of Federal Regulations

3.2 State and Local Regulations: All applicable state and local regulations which are in effect at the time of bidding the asbestos abatement project, and which have a direct bearing upon the project, will be included and incorporated by reference and made a part of the contract document.

4.0 **NOTIFICATION.** All notifications must be made by registered mail with a return receipt requested. When doing either demolition or renovation, all requirements for notification and emissions control apply for RACM in amounts greater than 160 square feet, 260 linear feet, or 35 cubic feet.

4.1 Environmental Protection Agency (EPA): G.C. Zarnas must notify, in writing, the Regional Office of the Environmental Protection Agency (EPA) of the planned asbestos abatement operation and of any significant changes to the plan:

4.1.1 Notification must be received by the EPA at least 10 working days prior to beginning the project;

4.1.2 Notification must be received by the EPA at least 10 working days before the end of the calendar year for nonscheduled operations or

- additive amounts;
- 4.1.3** Notification must be received by the EPA as early as possible before, but not later than, the following working day for certain demolition or renovation operations, such as emergencies, unsafe buildings, etc.;
- 4.1.4** An update notice must be sent to the EPA if the amount of asbestos noted in the original notification changes by at least 20 percent; and
- 4.1.5** A new notification is required to be sent to the EPA if the start date changes. If the start date is later, the notification must be sent as soon as possible before the original start date. If the start date is earlier, the notification must be received by the EPA at least 10 days prior to the start date.
- 4.1.6** The required EPA Notification of Demolition and Renovation form must be used to notify the EPA. Any other type of notification must include at least the following:
- The complete name, addresses and telephone number of the contractor;
 - The complete address and description of the location where the asbestos control operation will take place, including the size, age and use of the building and the amount of asbestos material present;
 - The complete name, addresses and telephone number of the actual Host Employer of the building, which may differ from the name of the job site;
 - The procedures that will be employed to comply with the regulations; and
 - The complete name, address and telephone number of the waste disposal site where the asbestos waste will be deposited.
- 4.2** Other Regulatory Agencies. U.S. EPA's 40 CFR 61 Subpart M requires that the notification dates pertain to the scheduled starting and completion of demolition and renovation. However, local jurisdictions can, and often do, define these dates in many different ways, for example the start dates may be for any one of the following: project mobilization, regulated area establishment, or actual abatement commencement. It is therefore imperative that the local requesting agency be contacted prior to issuance of the Notification in order to assure that the correct dates are furnished and specific local requirements complied with.
- 4.3** Multi-Employer Worksites. On multi-employer worksites, where the asbestos abatement operation requires the establishment of a regulated work area, there is a responsibility to inform other employers on the site of the nature of G.C. Zarnas' work, the existence of and requirements pertaining to the regulated area, and the measures taken to ensure that employees of other employers are not exposed. It is now the responsibility

of these employers to protect their employees. It should be noted that asbestos hazards at the work site must be abated by the contractor who created or controls the source of asbestos contamination. In addition, on all projects covered by OSHA's Asbestos Standard, in which there is a General Contractor, it is the General Contractor who exercises general supervisory authority over this work. Any Employer of employees working adjacent to a regulated area, must now take steps on a daily basis to ascertain the integrity of the enclosure and/or the control methods in use by the asbestos contractor. This is normally accomplished by G.C. Zarnas providing the Host Employer with a letter in which this information is set forth. The Host Employer then notifies the other employers and tenants whom he deems necessary and who are in the immediate vicinity of the regulated area.

- 5.0 WORK PLAN.** G.C. Zarnas will submit a site specific Work Plan of the procedures proposed for use in complying with the requirements of the asbestos abatement operation, the magnitude of which will be dependent upon the complexity of the removal project. Included in the plan will be the location and layout of the decontamination areas, the sequencing of the asbestos work, the interface of trades involved in the performance of work, methods to be used to assure the safety of G.C. Zarnas' employees, building occupants and visitors to the site, the disposal plan including the location of the approved disposal site, and a detailed description of the methods to be employed to control contamination. This is normally accomplished by G.C. Zarnas providing the Host Employer with a letter in which this information is set forth. The Host Employer then notifies the other employers and tenants whom he deems necessary and who are in the immediate vicinity of the regulated area. The Work Plan may be expanded to include the use of portable HEPA ventilation systems, closing out the building's HVAC system, the method of removal to prohibit visible emissions in the work area, and the packaging of removed asbestos debris.
- 6.0 ENVIRONMENTAL ISSUES.** An effort must be made to address all specific environmental issues that may emerge as a result of starting and completing the asbestos abatement project. In addition, future environmental issues, which may be a consequence of the completed project, must also be anticipated. Environmental issues management must be planned and conducted as an ongoing, organized activity during the project, mainly limited to immediate or near term regulatory concerns.
- 7.0 SMOKING CESSATION POLICY.** In keeping with the smoking cessation requirements imposed by OSHA's Asbestos Standard, there will not be any

smoking allowed within the work areas on any G.C. Zarnas asbestos abatement project. The work area includes, but is not necessarily limited to, the office or office trailer, all regulated areas, the decontamination unit, employee lunch rooms and storage areas. Each of these areas will be posted with NO SMOKING signs. Smoking bans in these areas will be enforced.

8.0 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

8.1 Training Certificates. All G.C. Zarnas field a supervisory engaged in abatement activities are required to have completed and passed, by written examination, an initial 40-hour Training Program for Asbestos Supervisors and Contractors as required by EPA's Model Accreditation Plan (AHERA) in 40 CFR 763, Subpart E. In addition to the initial training program, these individuals must also complete an EPA required 8-hour annual update training program.

All asbestos abatement workers are required to have completed, and passed by written examination, the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan's (AHERA) initial training program for asbestos abatement workers as outlined in 40 CFR Part 763, Subpart E. As with the supervisor, the worker is also required to complete an EPA certified 8-hour annual update training program.

8.1.1 Displaying the Certificates: A copy of both the initial 40-hour AHERA training certificate and a copy of the current annual certification must be present at the job site for each G.C. Zarnas employee assigned to the project on either a full or part-time basis. Where required by local or state requirements, supervisory personnel will either have or will obtain, prior to the start of work, the necessary certification for the asbestos abatement project. If required to do so by the contract documents, G.C. Zarnas will furnish the Host Employer, or the Host Employer's representative with proof of this certification.

8.2 Designated Competent Person. On all construction worksites covered by the Asbestos Standard, G.C. Zarnas will designate a Competent Person who has the qualifications and authority for ensuring worker safety and health as required by the Asbestos Standard, 29 CFR 1926.1101 and those portions of Subpart C, General Safety and Health Provisions for Construction 29 CFR 1926.20 through 32, which provide for a Competent Person, health and safety prevention programs, and frequent and regular inspections of the job sites, materials, and equipment.

8.2.1 Required Inspections: The designated Competent Person shall make frequent and regular inspections of the job sites, in order to perform the duties set out in this section. For Class I jobs, on-site inspections shall be made at least once during each work shift, and

at any time an employee request. For Class II and III jobs, on-site inspections shall be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time an employee request.

- 8.2.2** On Class I or II projects. On all worksites where employees are engaged in Class I or II asbestos work, the Competent Person, designated in accordance with this section, shall perform or supervise the following duties, as applicable:
- Set up the regulated area, enclosure, or other containment;
 - Ensure (by on-site inspection) the integrity of the enclosure or containment.
 - Set up procedures to control entry to or from the enclosure and area.
 - Supervise all employee exposure monitoring required by this section.
 - Ensure that employees working within the enclosure and/or using glove bags wear protective clothing and respirators as required.
 - Ensure through on-site supervision, that employees set up and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements.
 - Ensure that employees use the hygiene facilities and observe the decontamination procedures specified.
 - Ensure that through on-site inspection that engineering controls are functioning properly and employees are using proper work practices and,
 - Ensure that notification requirements in paragraph 4.3 are met.
- 8.2.3** Training for the competent person: For Class I, and II asbestos work the competent person shall be trained in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; the contents of this standard; the identification of asbestos; removal procedures, where appropriate; and other practices for reducing the hazard. Such training shall be obtained in a comprehensive course for supervisors, such as a course conducted by an EPA or state-approved training provider, certified by the EPA or a State, or a course equivalent in stringency, content and length.
- For Class III and IV asbestos work, the competent person shall be trained in aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures, practices for reducing asbestos exposures, use of wet methods, the contents of this standard, and the identification of asbestos. Such training shall include successful completion of a

course equivalent in curriculum and training method to the 16-hour Operations and Maintenance course developed by EPA for maintenance and custodial workers [See 40 CFR 763.92(a)(2)], or its equivalent in stringency, content and length.

- 8.3 On-Site Representative.** The U.S. Environmental Protection Agency's NESHAP, 40 CFR 61.145 (c)(8), requires the designation of an On-Site Representative. Unless otherwise stated, the On-Site Representative will be the same individual who has been designated the Competent Person for the project.
- In the event G.C. Zarnas should need to designate an employee of a sub-contractor as its Competent Person/On Site Representative on a particular job site, that individual will have all of the necessary training, education and written authority to comply with the requirements of the above named standards.
- 8.4 Supervisor.** G.C. Zarnas will employ full-time personnel who will have the designation of Supervisor. These individuals will be experienced in administration and supervision of asbestos abatement projects, including work practices, protective measures for building and personnel, disposal procedures, respiratory protection, etc.
- 8.5 Foreman.** Except as otherwise indicated, the Foreman will normally have the same education and training in asbestos control operations as the Supervisor, with only slightly less on-the-job experience. Here again, if required to do so by law, the Foreman will obtain all of the necessary certification for the project. The Foreman can also act as G.C. Zarnas' Competent Person on the job site.
- 9.0 WORKER TRAINING AND EDUCATION.** G.C. Zarnas shall, at no cost to the employee, institute a training program for all employees who perform Class I through IV asbestos operations, and shall ensure their participation in the program. Training shall be provided prior to or at the time of initial assignment and at least annually thereafter.
- 9.1 Training for Class I AND II Workers.** Training for Class I and II operations shall be the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E).
- When G.C. Zarnas Class II work with asbestos-containing material involves only the removal and/or disturbance of one generic category of building material, such as roofing materials, flooring materials, siding materials or transit panels, G.C. Zarnas is required to train employees who perform such work by providing a training course which includes as a minimum all the elements included in paragraph 9.4 of this section. Such course shall include "hands-on" training and shall take at least 8 hours.
- 9.2 Training for Class III Workers.** Training for Class III employees shall be the

equivalent in curriculum and training method to the 16-hour Operations and Maintenance course developed by EPA for maintenance and custodial workers who conduct activities that will result in the disturbance of ACM. [See 40 CFR 763.92(a)(2)]. Such course shall include "hands-on" training in the use of respiratory protection and work practices and shall take at least 16 hours.

9.3 Training for Class IV Workers. Training for employees performing Class IV operations shall be the equivalent in curriculum and training method to the awareness training course developed by EPA for maintenance and custodial workers who work in buildings containing asbestos-containing material. [See 40 CFR 763.92 (a)(1)]. Such course shall include available information concerning the locations of PACM and ACM, and asbestos-containing flooring material, or flooring material where the absence of asbestos has not been certified; and instruction in recognition of damage, deterioration, and delaminating of asbestos containing building materials. Such a course shall take at least two hours.

9.4 Training Content. The training program shall be conducted in a manner that the employee is able to understand. In addition to the content required by provisions in paragraph 9.1 of this section, G.C. Zarnas shall ensure that each such employee is informed of the following:

9.4.1 Methods of recognizing asbestos, including the requirement to presume that certain building materials contain asbestos;

9.4.2 The health effects associated with asbestos exposure;

9.4.3 The relationship between smoking and asbestos in producing lung cancer;

9.4.4 The nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures, and waste disposal procedures, and any necessary instruction in the use of these controls and procedures; including where Class III and IV work is performed, the contents of "Managing Asbestos In Place (EPA 20T-2003, July 1990) or its equivalent in content.

9.4.5 The purpose, proper use, fitting instructions, and limitations of respirators as required by 29 CFR 1926.103;

9.4.6 The appropriate work practices for performing the asbestos job;

9.4.7 Medical surveillance program requirements;

9.4.8 The content of the Asbestos Standard, 29 CFR 1926.1101, including appendices;

9.4.9 The names, addresses and phone numbers of public health organizations, which provide information, materials and/or

conduct, programs concerning smoking cessation. The employer may distribute the list of such organizations contained in Appendix J to the new Asbestos Standard, to comply with this requirement;

9.4.10 The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels.

9.5 Access to Training Materials. G.C. Zarnas shall make readily available to all affected employees without cost, written materials relating to the employee training program, including a copy of the OSHA Asbestos regulation, 29 CFR 1926.1101. G.C. Zarnas shall provide to the Assistant Secretary and the Director, upon request, all information and training materials relating to the employee information and training program.

9.6 Entry Procedures

9.6.1 Job Site: Workers entering the job site will be required to wear adequate clothing applicable to a construction job site. This includes appropriate footwear, trousers, shirts with sleeves, and hard hats and any other designated personal protective equipment.

9.6.2 Work Area: All personnel entering the work area, in which there is a potential to exposure to airborne asbestos fibers, or respiratory protection is required, must first meet the following criteria:

- They must have received a medical examination in compliance with the medical examination requirements of OSHA standard 29 CFR 1926.1101 within the past twelve (12) months and have a written certificate, or facsimile, from the physician attesting to his opinion that the individual may enter an atmosphere in which asbestos fibers are present and use a respiratory device; they must be trained in the use of the respiratory device, and when applicable, they must be fit -tested for the respiratory device; and they must receive adequate training for entry to an asbestos containment area.
- After they have met the above criteria, all personnel must enter the Clean Room and remove all street clothing, including underwear and socks. Under G.C. Zarnas' current policy, employees must then put on disposable underwear, or use a nylon bathing suit. Being nude under the protective clothing is no longer an individual preference. The underwear and bathing suit are generally furnished by the individual.
- A clean set of protective clothing must then be put on, leaving the head covering off. The individual must then don a respirator approved for the project and conduct the necessary field checks to determine the face piece-to-face seal. The head covering is then secured over the top of the respirator straps. The individual should then leave the Clean Room and proceed through the Shower Area and enter the Equipment Room.

- In those cases where the worker has been using any additional clothing or work tools, which have been left in the contaminated end of the Equipment Room, these should be put on at this time before leaving the Equipment Room and entering the work area.
- All donning of respiratory protective equipment and protective work clothing should be accomplished using the "buddy" system, involving two employees assisting each other. Prior to entering a work area, each worker should be examined by his "buddy" to ensure that all connections in the respirator system are properly made and that the protective clothing, booties, head covers, etc. are properly donned.

9.7 Decontamination Procedures. Before leaving the work area, all personnel are required to remove gross contamination and debris from their protective clothing and feet by either HEPA vacuum or wet wiping. The worker then proceeds to the Equipment Room and removes all clothing and equipment with the exception of respiratory protection equipment. All tools and extra work clothing, such as cold weather coats and pants, work boots or shoes, etc. which are contaminated, must remain in the containment area and should be stored in the dirty Equipment Room. All disposable protective clothing must be placed in an appropriately marked bag for disposal with other contaminated waste materials. All personnel are then required to use the following decontamination procedures when leaving the work area: Still wearing the respirator, proceed to the showers. Showering is not only essential for decontamination, but is mandatory under G.C. Zarnas' policy. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedures are required as a minimum:

9.7.1 Supplied-air and PAPR Respirators: If using supplied-air or PAPR respirators, thoroughly wet the body, including the face and hair. If using a PAPR, turn the blower unit down so that the filter opening is towards the chest.

With the respirator still in place, thoroughly wash the body, the hair, the respirator face piece, and all outside parts of the respirator except the blower unit and the battery pack on a PAPR. Pay particular attention to the area around the seal of the face piece and under the straps.

Completely wet the hair, face and respirator. Take a deep breath, and while holding it or exhaling it slowly, stand so that the water is directed at the face and remove the respirator and hold it away from the face before starting to breath normally.

Carefully wash the face piece of the respirator inside and out. If supplied-air, disconnect the airline. If PAPR, shut it down in the following sequence. First cap the inlet opening to the filter cartridge

and then turn off the blower unit. (This sequence will help keep debris which has collected on the inlet side of the filter from dislodging and contaminating the outside of the unit). Thoroughly wash the blower unit and hoses, and carefully wash the battery pack with a damp rag to avoid getting water into the battery pack.

Shower completely with soap and water, paying special attention to areas containing body hair. Rinse thoroughly, then rinse the walls and floor of the shower stall prior to exiting. Proceed to the Clean Room to dry off and put on street clothing or a new set of protective clothing.

- 9.7.2** Air Purifying Respirators: For air purifying-negative pressure respirators, thoroughly wet the head, neck and body as much as possible without wetting the respirator filter.

Take a deep breath, and while holding it or exhaling it slowly, seal the filter cartridge inlet opening with either a piece of tape or a cap made for this purpose. Immediately wet the respirator and filter, and while standing with the face directed at the water, remove the respirator from the face and begin breathing normally.

When disposing of the used filter cartridges, thoroughly wet the cartridge and dispose of it as contaminated waste. Then wash the face piece of the respirator, both inside and out.

Shower completely with soap and water, paying special attention to all areas of body hair. Rinse thoroughly and then rinse the walls and floor of the shower stall prior to exiting. Proceed to the Clean Room to dry off and put on street clothing or a new set of protective clothing.

Note: All used filter cartridges which are to be replaced, must be put into an appropriate waste disposal bag which should be located in the air lock between the shower and the clean room. Under no circumstances should the ACM waste disposal bag be located inside the clean room.

- 9.7.3** Towels and Bath Mats: All disposable towels, bath mats and shower cloths which are contaminated, must be treated as contaminated waste and properly disposed of.

- 9.8** Medical Examinations. G.C. Zarnas will offer at no cost to the employee, a physical examination for all G.C. Zarnas personnel who are either working in an area in which there is a potential exposure to asbestos, or who are required to use any type of respirator protection equipment. These physical examinations will, as a minimum, meet the requirements of the Medical Surveillance portion of the OSHA asbestos standard for the construction industry, 29 CFR 1926.1101. As a part of the examination, the physician will also be asked to make an evaluation of the employee's ability to work in environments capable of producing heat stress in the worker. Refer to the

G.C Zarnas Respirator Protection Program.

9.8.1 Report of Medical Examination: At a minimum, the following information will be contained on each report of medical examination completed by the examining physician:

- The name and social security number of the employee;
- Whether or not the employee has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos;
- Any recommended limitations on the worker or on the use of personal protective equipment such as respirators;
- A statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure; and
- A statement that the worker has been informed of the health risks involved in smoking, of the synergistic relationship between smoking and asbestos exposure in producing lung cancer, and that cessation of smoking will reduce the risk of lung cancer.

9.9 Emergency Procedures. Emergency Procedures must be developed prior to the initiation of abatement activities. The Emergency Procedures must be in written form and prominently posted in the site office and the employees' eating area. Copies must also be posted in the clean change room and the dirty equipment room of the worker decontamination unit. Prior to entering the containment for the first time, everyone must read and sign these procedures to acknowledge receipt and understanding of the work site layout, location of emergency exits, emergency routes to follow and the emergency procedures.

The Emergency Procedures must include considerations of fire, explosion, toxic atmospheres, electrical incidents, slips, trips and falls, confined spaces, and heat-related injuries. Procedures must be written, emergency exits noted and marked, emergency evacuation routes mapped out, emergency and evacuation annunciation systems identified, emergency phone numbers listed, and any other critical information, such as barriers that may affect response capabilities, must be included.

Once these procedures have been posted, employees must be trained in these procedures.

9.9.1 For Non-Life Threatening Situations: Employees injured or otherwise incapacitated must decontaminate following normal procedures, with assistance from fellow workers if necessary, before exiting the work area to obtain proper medical treatment.

9.9.2 For Life-Threatening Injury or Illness: Measures to stabilize the injured worker, remove him/her from the work area, and secure proper medical treatment will take priority over worker decontamination. Personal protective equipment should be available

for response team members needing to enter the containment.

10.0 DECONTAMINATION FACILITIES. Unless otherwise directed by the contract document, and space not being a factor, G.C. Zarnas will provide separate personnel and equipment decontamination facilities. Under this provision, the Personnel Decontamination Unit will be the only means of worker ingress and egress to the work area. All contaminated material and equipment will exit the work area through the Equipment Decontamination Unit. In some cases, permanent showering facilities may be utilized, and in others G.C. Zarnas will either build a decontamination unit or furnish a prefabricated decontamination unit.

While the drawing in paragraph 10.1 depicts the general arrangement of the type of decontamination facility used by G.C. Zarnas, there are many specific arrangements, which may vary slightly but function the same as that shown in the drawing. For example, the decontamination facility could be located parallel to the work area or it could be perpendicular to it, it could be located inside the work area or it could be outside the work area. The only important criteria for placement of the decontamination facility, is that it exits to the outside ambient surroundings only at the clean end of the unit and exits into the isolated work area only at the equipment or dirty end of the unit. However, space permitting, every effort should be made to locate the decon unit contiguous and adjacent to the work area.

10.1 Personnel Decontamination Unit (DECON). The Personnel Decontamination Unit will consist of a serial arrangement of five (5) connected rooms or spaces, designated the Clean Room, the Air Lock, the Shower Room, the Air Lock and the Equipment Room, separated by impermeable walls. Floor to ceiling height should not be less than 6 feet 6 inches. Access to each of these five connected rooms or spaces will be protected by constructing overlapping layers of 6-mil polyethylene (poly) plastic sheeting to form a double or triple barrier flap to each room or space. Construction materials may include two by fours, plywood, and 6mil frosted, opaque or black, regular or fire retardant polyethylene sheets, to provide worker privacy, and suitable framing.

10.1.1 Clean Room: The Clean Room, or change room as it is sometimes referred to, is physically and visually separated from the rest of the building for the purpose of allowing personnel to change into protective clothing. It is constructed so as to have an airtight seal between it and the rest of the building and designed so that access to the work area from the Clean Room is only through the double or triple barrier flaps, made from several layers of overlapping 6-mil poly, to the Air Lock, the Shower Room, the other Air Lock and the Equipment Room. Asbestos contaminated items are not allowed to

enter this room for any reason.

Entrance to the Clean Room from the outside uncontaminated area will be controlled by either a set of the overlapping poly barrier flaps or a rigid door. In those cases where security is a consideration, the rigid door will be used and outfitted with a hasp and padlock. Access to the Clean Room from inside the decontamination unit will only be through a set of the overlapping poly barrier flaps separating the Clean Room from the Air Lock and the Shower Room. The Clean Room will also act as a storeroom for employee's street clothing, uncontaminated equipment, such as respirators, towels, protective clothing, etc., and as an information center for the posting of required documents and emergency information.

The floor of the Clean Room must be kept clean and dry at all times, and all surfaces should be damp wiped with a disinfectant solution after each shift change. An adequate supply of towels and bath mats will be provided on a continuous basis. Ideally, employee storage lockers, or their equivalent, will also be provided.

The air monitoring contractor will be instructed to conduct daily air sampling of the interior of the Clean Room in order to insure that this area is constantly maintained as clean, with a fiber count at or below 0.01 f/cc at all times.

- 10.1.2 Air Locks:** The Air Lock is nothing more than a small room which occupies the space between the Clean Room and the Shower Room and the Shower Room and the Equipment Room. There must be an Air Lock on both sides of the Shower Room. The purpose of these two extra rooms are to provide an additional measure of protection to prevent asbestos fibers from escaping the contaminated areas of decon and entering the clean areas. The size of the Air Locks are determined solely by the amount of overall space available for the decon unit. Space permitting, the Air Lock between the Shower Room and the Clean Room can be used to store clean towels and floor mats, soap and shampoo, and the waste disposal bag for asbestos-contaminated filters.
- 10.1.3 Shower Room:** G.C. Zarnas will provide a completely water tight operational shower to be used for transit by cleanly dressed workers heading for the work area from the Clean Room and/or for showering by workers heading out of the work area after undressing in the Equipment Room. The Shower Room must be constructed in a "pass through" design, a configuration that will require the worker to pass from the contaminated Equipment Room, through the shower, and into the Clean Room without stepping back onto a contaminated area. An adequate number of

showers will be provided for the size of the project.

For sanitary reasons, it is advisable to install a free draining floor on the top of the shower pan, and the shower heads should be mounted so as to cause water running down the walls to drip into the pan. Each shower head will contain both hot and cold water, which can be adjusted by the person taking the shower. The Shower Room must contain at least one shower and G.C. Zarnas must ensure that soap and clean towels are always present. The shower room must be cleaned and drained properly at the end of each work shift.

Shower waste water will either be drained or stored for use in amended water. Drains will be equipped with an approved filtering system, which provides, as a minimum, 5 micron waste water filters in line to appropriately filter the waste water for sewer disposal. Where required, approval will be obtained from the appropriate regulatory agency or commission for disposal of filtered waste water into the local sewer system. Contaminated water can not be released to uncontaminated areas.

10.1.4 Equipment Room: This is a change and transit room for personnel who have had access to the contaminated work area. All work equipment, footwear and additional contaminated work clothing must be left in this room. The Equipment Room will have two (2) exits, one leading to the contaminated work area and the other to the overlapping poly barrier flaps leading into the Air Lock located between the Shower Room and the Equipment Room. If, for some reason, the airborne asbestos level in the work area is expected to be high, as in dry removal, an intermediate cleaning space will be added between the work area and the Equipment Room.

On those removal projects that have a high amount of debris, it may be helpful to place an additional sheet of poly on the floor in the Equipment Room at the beginning of each day and removed at the end of the work shift. This will help to prevent the path from the work area to the shower from becoming overburdened with contaminated debris.

10.1.5 Negative Pressure in the DECON. In order to prevent the escape of asbestos fibers from the decon, it will be necessary to maintain a constant inward flow of air from the outside of the Clean Room through the Air Locks and Shower Room and into the Equipment Room. This sole source of air flow must originate from the uncontaminated area outside the asbestos removal, demolition or renovation enclosure. Since a negative pressure system normally exists inside the work area, this lower pressure may already create a sufficient inward flow of air to provide the degree of protection

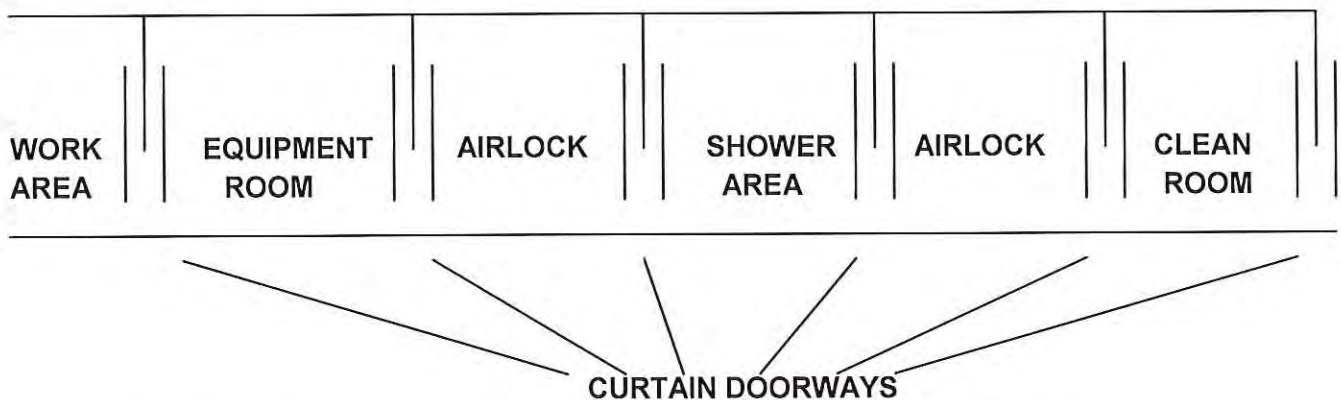
necessary to prevent the escape of fibers.

However, if a simple smoke test, performed at the entrance to each room in the decon, does not indicate a satisfactory inward air flow, it will be necessary to install a separate negative air handling unit in the Equipment Room, an adequately sized unit capable of creating a differential pressure which will develop the required inward air flow.

Note: Before beginning work within the decon area, which is in its self a negative pressure enclosure, and at the beginning of each shift, the decon area will be inspected for breaches and smoke-tested for leaks, and any leaks sealed.

If a rigid door is used to control access to the Clean Room from the outside area, it maybe necessary to control the flow of inward air by installing a louvered opening in the rigid door. If the louvered door is used, the opening must be protected with a High Efficiency Particulate Air (HEPA) filter, which is certified to be at least 99.97 percent efficient for 0.3 micron particles, to prevent the escape of asbestos fibers in the event the negative pressure system should fail.

EXAMPLE OF A TYPICAL DECONTAMINATION UNIT DECONTAMINATION AREA



10.2 Material Decontamination Unit. The Material Decontamination Unit, or Bag Out Area as it is commonly referred to, is generally required only on large asbestos abatement projects or as an emergency exit. If required to do so as a part of the contract document, and where space permits, the material removal area will be constructed by G.C. Zarnas according to the

following:

10.2.1 Material Decontamination Area: Space permitting, the Bag Out Area will be constructed at some location away from the personnel decontamination unit. Whenever possible, this will be located where there is direct access from the work area to the outside of the building. This consists of a clean area, which opens to the outside, a wash room that opens to the contaminated work area, and an air lock, which separates the clean area, and the wash room. Barrier flaps constructed of several sheets of overlapping 6-mil poly control the openings to each of these areas. Here again, as in the Personnel Decontamination Unit, an inward flow of air is required to prevent the escape of asbestos fibers to the outside air.

However, due to the smaller size of the Bag Out Area, the negative pressure system in the Work Area is usually more than sufficient to produce this inward flow of air.

Some type of water spraying unit should be used in place of a shower head and controls in the wash room, and it should have a pan large enough to catch the amount of water required to wash off bags containing contaminated waste materials. This waste water should be appropriately filtered and discharged or stored for use as amended water in the work area.

Personnel working in the material removal area will not use this as a means of egress from the work area except in the case of an emergency.

10.3 Material Decontamination Procedures

10.3.1 Exiting the Work Area: While still in the work area, the appropriately bagged asbestos-contaminated waste materials will be properly sealed with a "goose neck" seal and then a HEPA vacuum will be used to remove the gross contamination from the bags. The bags will then be moved into the wash room of the Bag Out Area.

There, the seals will be checked and all bags or waste packages will be thoroughly washed and decontaminated before being moved forward into the air lock area. The workers who have just completed washing the waste material will not proceed into the air lock or the clean area, but will return to the work area, leaving the decontaminated bags of waste stored in the air lock area.

10.3.2 Entering the Clean Holding Area: Workers, who are dressed in clean, uncontaminated protective clothing, and wearing a appropriate respiratory protection, will enter the clean area of the Bag Out Area from the outside and remove the bags of contaminated waste from the air lock by reaching into the air lock and pulling the bags through the barrier flaps into the clean room.

These "clean" workers will not proceed any further inside the Bag Out Area than the clean area, and will not go through the air lock into the dirty area. Once the bags are inside the clean area, they will be placed into a second bag, the appropriate generator label will be placed between the two bags, and the second bag will be "goose neck" sealed. The completely decontaminated bag will then be removed from the clean area to the outside storage area.

- 10.4 Remote Decontamination Facilities.** In unusual situations, alternate methods of providing decontamination facilities may be utilized in accordance with all applicable codes and regulations. Such a case in point may be the requirement to locate the decontamination facility a considerable distance away from the work area, even to the extent of locating it several floors above or below the floor housing the work area. In cases of this type, a small room would be constructed at one point in the work area that would open to the outside of the work area, with both the inner and outer openings controlled by overlapping 6-mil poly barrier flaps. The worker would enter this small room directly from the work area, a HEPA vacuum would be used to remove any gross contamination on the worker, the outside of the respirator would be washed off, and the worker would put on a clean set of protective coveralls over the dirty ones. The worker would then proceed by the shortest route directly to the decontamination facility, and once there, would follow the routine sequence for decontamination.
- 10.5 Cleaning the Decontamination Units.** The debris and residue from inside the decontamination units will be cleaned on a daily basis or as otherwise indicated on the contract documents. The cleaning will consist of damp wiping or hosing down all surfaces after each shift change.
- 10.5.1 Contaminated Clean Room:** In the unlikely event that the Clean Room of the personnel decontamination unit should become contaminated with asbestos-containing debris, it will be necessary to close down the entire decontamination unit and erect a temporary new one until such time as the dirty unit can be completely decontaminated. The reason for this is that if the Clean Room becomes contaminated, there is no place for the workers cleaning it to be decontaminated.
- 10.6 Discharge of Waste Water.** Shower waste water should be filtered through 5 micron waste water filters and recycled for use as a wetting agent and/or added to the 6-mil bags of asbestos-contaminated waste before sealing the bags for disposal in an approved landfill. If at all possible, this filtered waste water should be reused and not just disposed of in a sewer system. However, if it is necessary to dispose of clean, filtered waste water into a city sewer system, a special permit may be required before this can be done. In some areas, local restrictions will not allow the disposal of this

waste water into a sewer system even if filtered. A thorough effort must be made to determine what the requirements are for disposing of waste water in each location prior to the start of the project.

11.0 NEGATIVE PRESSURE ENCLOSURE SYSTEM

11.1 General. The work area is the location where the asbestos abatement work occurs. It may be a portion of a room, a single room, or several rooms, or it may, in some cases, be located outdoors, such as an outdoor boiler. The work area is considered contaminated during the abatement work and must be isolated from the balance of the building. The work area must then be decontaminated at the completion of the asbestos abatement work. The enclosure, by which this contaminated area is isolated, is known as the temporary enclosure or the critical barrier. On those abatement projects where the work area is outside of a building, it may not always be necessary to build an enclosure in order to isolate it. The work area will be completely isolated from the other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the work area become contaminated with asbestos-containing dust or debris as a consequence of an accident or a spill, those areas must be cleaned in accordance with appropriate and approved procedures.

Unless otherwise specified by the contract document, all uncontaminated movable furniture, equipment, etc., will be cleaned with a HEPA filtered vacuum cleaner and removed from the work area before commencing the abatement work. Those items that can not be removed will be cleaned with a HEPA filtered vacuum cleaner or wet wiped and then covered with one or two layers of poly sheeting, properly taped. This covered furniture or equipment will then be considered as "outside" the work area unless the poly covering or seal is breached.

Unless otherwise specified in the contract document, all heating, air conditioning, ventilating or return air system openings within the work area must be completely shut down and sealed off with poly and tape. Caution must be taken to check with the Host Employer to ensure that this sealing off of the HVAC system will not cause any undue problems.

11.1.1 Critical Barrier: G.C. Zarnas will construct a critical barrier, which will ensure the work place is isolated and contained, by erecting impermeable barriers at all exits or openings, including doorways, duct chases, manholes, mechanical shafts, elevator shafts, floor openings, drains, and the like, so that all possible exit or entrance routes are effectively barricaded and sealed.

11.1.2 Work Area Preparation: When not desirable to provide extensive work area preparation installation as a general measure, plastic sheeting will be used, but only where there is specific need to

protect particular items, areas, or finishes from damage or temporary contamination.

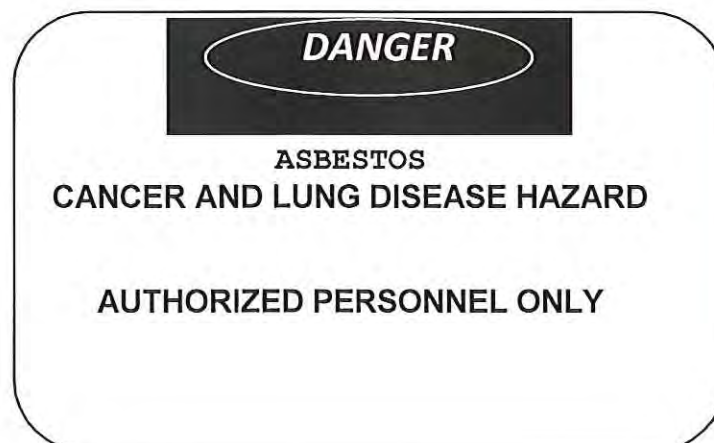
All tools, scaffolding, vacuums, air filtering units, etc. which are necessary for the abatement work, should be placed into the work area before it is completely isolated.

- 11.2 Access Control.** Access to the work area will be permitted only through the personnel decontamination unit. All other means of access will be closed off and sealed, and warning signs will be displayed on the clean side of the closed access. No one will be allowed to enter the work area that does not have a direct need to do so. Persons entering the work area must follow all entry procedures, including the signing in and out on the Containment Record, the removal of street clothing, donning protective clothing, using the appropriate respiratory protective device, and complying with all of the requirements of G.C. Zarnas' respiratory protection program and medical surveillance requirements.

Depending on the nature of the abatement project, the respiratory protection being used, and the air monitoring results, persons desiring entry to the work area may be required to show verification of a physician's clearance allowing the individual to use a respirator and enter an asbestos-containing atmosphere.

- 11.3 Warning Signs.** G.C. Zarnas will post a sufficient number of appropriately worded warning signs to adequately notify all persons in the vicinity of the work area of the dangers involved. The signs will normally be posted directly onto the clean side of the work area isolation barrier and at each entrance to the work area and the decontamination units. In some states, it may be necessary to post these warning signs at least three (3) days prior to beginning asbestos abatement and to keep them posted until final clean results are received.

The G.C. Zarnas warning signs, which are 20 inches high by 14 inches wide, comply with the requirements of the Occupational Safety and Health Administration's standard on warning signs, 29 CFR 1910.145. Each sign has the following legend and is red, white and black in color:



RESPIRATORS AND PROTECTIVE CLOTHING REQUIRED IN THIS AREA

12.0 NEGATIVE PRESSURE SYSTEM. The Negative Pressure System is a fully operational engineering control system, which exhausts only the minimum amount of air from the work area necessary to create a minimum continuous negative pressure of -0.02 to -0.4 inches of water within the enclosure with respect to the area outside the enclosure. This is achieved by using an Air Filtering Device (AFD), which is a self-contained filtering machine capable of producing air flow and using a HEPA filter to collect and retain the airborne asbestos fibers. The methodology used in the Negative Pressure System is to seal all potential air paths into the work area as tightly as possible and provide a filtered exhaust system which removes only enough air from the sealed, isolated work area to establish a lower pressure to offset any air leakage which occurs, and to provide additional engineering controls within the work area to lower airborne asbestos fibers.

Note: Once the asbestos abatement operation has begun, and the negative pressure system has been activated, the negative pressure must be maintained continuously until the air monitoring reports indicate the area is no longer contaminated.

12.1 Establishing Negative Pressure. After construction of the enclosure is completed, a ventilation system(s) should be installed to create a negative pressure within the enclosure. Such ventilation systems must be equipped with HEPA filters to prevent the release of asbestos fibers to the environment outside the enclosure and should be operated 24 hours per day during the entire project until the final cleanup is completed and the results of final air samples are received from the laboratory. EPA requires that a sufficient amount of air be exhausted to create a minimum pressure of -0.02 inches of water within the enclosure with respect to the area outside the enclosure. This should commence at the beginning of any work that could possibly disturb ACM and continue until the passing of final clearance sampling and analysis.

From a practical standpoint, this pressure differential should not be above the -0.06 inches of water column range, since anything higher begins to "float" the plastic off of the walls and floor.

This ventilation system(s) should exhaust the HEPA-filtered clean air outside the building in which the asbestos removal, demolition or renovation is taking place. If access to the outside is not available, the ventilation system can exhaust the HEPA-filtered asbestos-free air to an area within the building that is as far away as possible from the enclosure. Care must be taken to ensure that the clean air is released either to an asbestos-free area or in such a way as not to disturb any asbestos-

containing materials.

- 12.2 Estimating Number of Air Filtering Devices.** A portable ventilation system, identified by G.C. Zarnas as an Air Filtering Device (AFD), is necessary to create a Negative Pressure System within the asbestos enclosure. The AFD's are designed to capture and clean the air inside the enclosure before exhausting it to the outside of the enclosure. The AFD's must be equipped with a series of filters which include: the first-stage or pre-filter, which is a low-efficiency type filter for particles 100 um and larger; the second-stage or intermediate filter, which is a medium efficiency filter effective for particles down to 5 um; and third-stage or final filter which is a High Efficiency Particulate Filter having an efficiency of not less than 99.97 percent. AFD's are available from several manufacturers and range from 600 CFM to over 2000 CFM and are capable of filtering particles of 0.3 micron in size with an efficiency of 99.99 percent. The number and capacity of AFD's required to ventilate an enclosure depends on the size of the area to be ventilated.

Lacking specific air monitoring data, which would indicate the number of Air Filtering Devices (AFD) required in the work area to provide a fully operational Negative Pressure System, G.C. Zarnas will estimate the number of AFD's needed in the following manner:

To determine the number of AFD's required, G.C. Zarnas will ascertain the volume, in cubic feet, of the work area by multiplying the floor area by the ceiling height. The total air circulation requirement for the work area, in cubic feet per minute (CFM), will then be determined by dividing the above volume by the number fifteen (15), which is 4 changes per hour.

$$\frac{\text{Volume of work area (cu.ft.)}}{15} = \text{Air Circulation Requirement (CFM)}$$

The number of Air Filtering Devices needed to achieve this rate will then be determined by dividing the air circulation requirement (CFM) by the working capacity of the AFD(s) used.

$$\frac{\text{Air Circulation Requirement (CFM)}}{\text{Capacity of AFD with loaded filters (CFM)}} = \text{Number of AFD's needed}$$

Normally, one (1) additional AFD is added as a backup in case of equipment failure or if a machine needs to be shut down for filter changing.

The Negative Pressure System relies on monitoring results to dictate machine usage, and not on a passive, inactive system deployed on the basis of standard calculations, which do not anticipate the peculiarities of each work area. Further, the Negative Pressure System has an active, positive

control over the air flow in the work area with an arrangement that can be freely changed to react to the air movement and fiber dynamics of each individual project. The monitoring results and patterns, therefore, can be used to maximize system effectiveness.

- 12.3** Positioning the Air Filtering Devices. Locate the AFD's so that makeup air enters the work area primarily through the air entry routes of the decontamination facilities, both personnel and material, and traverses the work area as much as possible. This may be accomplished by positioning the HEPA filtered AFD's at a maximum distance from the worker access opening or other makeup air sources.

Additional AFD machines could be located free standing inside the work area to circulate air within the area in order to filter and trap contamination out of the air. Depending on work methods, other engineering controls, the form or type of asbestos and its material characteristics, and previous treatments, the number of machines may be varied as little or as much as needed to lower the airborne fiber levels in the work area.

Note: Care should be taken to avoid having the exhaust opening of the AFD directed at the plastic walls of the containment area or at any of the sealed openings.

Note: Air movement from the AFD's should be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or a collection device.

- 12.3.1** Exhausting the AFD: AFD's should, whenever possible, be exhausted outside of the building. However, in some areas, a special permit may be required before you are allowed to exhaust an AFD directly into the atmosphere outside of a building or containment. Every effort must be made to determine the local requirements for exhausting AFD air before beginning the project and then complying with these requirements during the completion of the project.

In order to insure protection of the environment, AFD's should have either an electrical or mechanical lockout to prevent the fan from operating without the HEPA filter in place. In addition, periodic air sampling of the AFD exhaust should be obtained to insure the integrity of the HEPA filtering system.

- 12.4** Other Considerations. Under certain conditions, other hazards must be given consideration. For example, high work area temperatures, gaseous or organic contaminants may dictate a need to increase exhaust air. These hazards must be considered and balanced one against the other. If the other contaminants can not be eliminated or filtered, or if cooling devices are not available to reduce temperatures, then additional air exhausting may be necessary. In these cases, exhaust may be increased or machine

positioning may be changed until the other contamination levels, temperature, etc., are reduced to acceptable levels. This must be done with extreme care, however, since each unit of additional exhaust to the outside increases the risk of contamination release in the event of an accident or component failure. If air inlets are provided to introduce make-up air, they must be monitored, provided with fixed doors, which are closed when not in use, or equipped with HEPA filters to prevent contamination escape.

- 12.5 Dismantling the System.** When the final inspection and results of the final air tests have indicated the work area has been completely decontaminated, the Air Filtering Devices may be turned off and removed from the work area.

Before removal from the work area, the pre-filter of the AFD(s) should be removed and properly disposed of as contaminated waste, and the intake opening of the machine should be sealed with 6 mil poly to prevent environmental contamination from the balance of the machine's filters.

13.0 PRESSURE DIFFERENTIAL MONITORING

- 13.1 Manometer / Pressure Instruments.** An inclined manometer or differential pressure gauge, capable of 0-3" wg for measuring the negative pressure within the enclosure, must be installed at a representative location on the negative pressure enclosure on each G.C. Zarnas project and must be monitored frequently throughout all work shifts during which asbestos removal, demolition or renovation takes place.

Although there are several types of manometers and differential pressure gauges available for this purpose.

- 13.2 Documenting Manometer Readings.** It is a provision of the new Asbestos Standard that continuous documentation is available to insure there is always a minimum of -0.02 column inches of water pressure differential between the inside and outside pressure of the enclosure. It will be the responsibility of the supervisor to insure that air monitoring personnel take manometer readings at the beginning of, and at least twice during, each shift and that these readings are accurately documented in an appropriate log or the supervisor's daily journal.

14.0 NESHAPS ASBESTOS CATEGORIES

- 14.1 Friable Asbestos-Containing Material (ACM).** Friable asbestos-containing material (ACM) is defined by NESHAPS as any material containing more than 1 percent asbestos as determined using the Polarized Light Microscopy (PLM) method, that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Local or state regulations may be more stringent.

- 14.2 Nonfriable Asbestos-Containing Material.** Nonfriable ACM is any material

containing more than 1 percent asbestos as determined using the Polarized Light Microscopy (PLM) method that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure. EPA also defines two categories of nonfriable ACM.

- 14.3** Category I Nonfriable ACM. Category I nonfriable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product which contains more than 1 percent asbestos as determined using the Polarized Light Microscopy (PLM) method, and which is in good condition and not considered to be friable.
- 14.4** Category II Nonfriable ACM. Category II nonfriable ACM is any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the Polarized Light Microscopy (PLM) method, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure. Category II ACM (cement siding, transit board shingles, etc.) subjected to intense weather conditions such as thunderstorms, high winds or prolonged exposure to high heat and humidity may become "weathered" to a point where they become friable.
- 14.5** Regulated Asbestos-Containing Material (RACM). Regulated asbestos-containing material (RACM) is friable asbestos material, Category I nonfriable ACM that has become friable, Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.
- 15.0** **REMOVAL OF ASBESTOS-CONTAINING MATERIAL (ACM).** After preparation of the decontamination units, enclosure of the work area, and start up of the negative pressure system, the gross removal of asbestos containing materials may begin.
- 15.1** Access to Asbestos-Containing Materials. Prior to actual removal of asbestos-containing material, it may be necessary to dismantle ceilings, electrical, or mechanical systems in order to gain access to the asbestos-containing material. The dismantled components will either be cleaned, protectively wrapped, and stored for re-use, preferably outside the work area, or the components will be properly decontaminated and disposed of as general construction trash. However, if the decision is made not to decontaminate the components, they must be properly packaged, labeled, and disposed of as asbestos-containing waste.
- 15.2** Amended Water. Prior to beginning any part of the actual ACM removal, G.C. Zarnas must use amended water to thoroughly soak or wet down the asbestos-containing material sufficiently to retard the release of asbestos fibers during disturbance of the material. The amended water penetrates

more effectively than plain water and permits more thorough soaking of the ACM. The amended water is generally prepared by mixing at least one ounce of surfactant (wetting agent) to 5 gallons of water. A coloring agent added to the surfactant will allow the worker to know at a glance which is the wetted area.

The amended water is applied to the ACM with an airless sprayer, which will allow the amended water to be applied in a fine spray that minimizes the release of asbestos fibers by reducing the impact of the spray on the material to be removed.

15.3 Other Removal Agents. In some cases, G.C. Zarnas will find it necessary to use other removal agents. For example, a penetrating type encapsulant designed specifically for removal of asbestos-containing materials. When using such a removal encapsulant, it may be necessary to remove the ACM from the substrate before the encapsulant hardens or becomes dry.

15.4 Wet Removal Procedures. In order to thoroughly soak or wet down the asbestos-containing material, G.C. Zarnas must spray the material with amended water or other removal agents, using spray equipment capable of providing low pressure application to reduce the release of fibers. The material must be saturated sufficiently to wet it to the substrate without causing excessive dripping. The asbestos-containing material must be sprayed repeatedly before, during, and after the removal process to maintain an adequately wet condition to minimize asbestos fiber release. The saturated asbestos-containing material should be removed in small sections, and if possible, placed directly into the disposal bags as it is removed. The ACM can not be allowed to fall or be dropped to the floor during the removal process, nor can the asbestos-containing material be allowed to dry out during this procedure. The asbestos-containing debris must not be allowed to accumulate on the floor of the work area and must be bagged at least several times during the work shift and always at the end of the work shift.

Appropriately bagged and adequately wet waste material will be held in the staging area until such time as it is forwarded to the disposal site. Where the asbestos-containing material consists of materials that do not readily absorb water, such as pre-molded or thermal block insulation, total penetration or saturation may not occur, thus resulting in partially wet removal. When working with these types of materials, care must be taken to insure that all exposed surfaces of these materials have been adequately wetted.

15.4.1 Freezing Temperature: When the temperature at the point of wetting is below 32 degrees Fahrenheit, the requirements for adequately wetting the ACM can be discontinued. During periods when wetting operations are suspended due to freezing temperatures, G.C. Zarnas must record the temperature in the area

containing the ACM at the beginning, middle, and end of each workday and maintain these daily temperature records for a period of two years, making them available to the EPA when requested.

- 16.0 METHODS OF COMPLIANCE.** G.C. Zarnas will use the following engineering controls and work practices in all operations covered by this section, regardless of the levels of exposure:
- 16.1 Wet Methods.** Wet methods to adequately wet the ACM, controlling employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, including the use of a misting unit to create a high level of humidity. Some exemptions to wetting include those times when it can be demonstrated that the use of wet methods are not feasible, such as in freezing temperature, when water would create an electrical hazard or equipment malfunction, or when it would create a slipping hazard such as on roof surfaces.
- 16.2 HEPA Equipped Vacuums.** HEPA filter equipped vacuum cleaners should be used to collect both ACM or PACM dust and small particles of material.
- 16.3 Prompt Clean-up.** Prompt clean-up (not allowing accumulation) and disposal of wastes and debris contaminated with asbestos in to leak-tight containers.
- 16.4 Additional Control Methods.** In addition to the above, G.C. Zarnas will use the following control methods to achieve compliance with the TWA, permissible exposure limit and excursion limit prescribed by this section:
- 16.4.1** Local exhaust ventilation equipped with HEPA filter dust collection systems;
- 16.4.2** Enclosure or isolation of processes producing asbestos dust;
- 16.4.3** Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;
- 16.4.4** Use of other work practices and engineering controls that the Assistant Secretary can show to be feasible;
- 16.4.5** Wherever the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the permissible exposure limit and/or excursion limit G.C. Zarnas shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of the Asbestos Standard.
- 16.5 Prohibitions.** The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:
- 16.5.1** High-speed abrasive disc saws that are not equipped with point of

- cut ventilator or enclosures with HEPA filtered exhaust air;
- 16.5.2** Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air;
- 16.5.3** Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM and PACM; and
- 16.5.4** Employee rotation as a means of reducing employee exposure to asbestos.
- 16.6** Class I Requirements. In addition to the provisions listed above, the following engineering controls and work practices and procedures shall be used.
- 16.6.1** All Class I work, including the installation and operation of the control system shall be supervised by a competent person as defined in this program;
- 16.6.2** For all Class I jobs involving the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material; for all other Class I jobs, where G.C. Zarnas cannot produce a Negative Exposure Assessment, or where employees are working in areas adjacent to the regulated area, while the Class I work is being performed, G.C. Zarnas shall use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:
- Critical barriers shall be placed over all openings to the regulated area: or
 - G.C. Zarnas shall use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area surveillance during each work shift at each boundary of the regulated area, showing no visible asbestos dust; and perimeter area monitoring showing that clearance levels contained in 40 CFR Part 763, Subpart E, of the EPA Asbestos in Schools Rule are met, or that perimeter area levels, measured by (PCM) are no more than background levels representing the same area before the asbestos work began. The results of such monitoring shall be made known to G.C. Zarnas no later than 24 hours from the end of the work shift represented by such monitoring.
 - For all Class I jobs, HVAC systems shall be isolated in the regulated area by sealing with a double layer of 6 mil plastic or the equivalent;
 - For all Class I jobs, impermeable drop cloths shall be placed on surfaces beneath all removal activity;
 - For all Class I jobs, all objects within the regulated area shall be

covered with impermeable drop-cloths or plastic sheeting which is secured by duct tape or an equivalent; and

- For all Class I jobs where G.C. Zarnas cannot produce a Negative Exposure Assessment, or where exposure monitoring shows that a PEL is exceeded, the employer shall ventilate the regulated area to move contaminated air away from the breathing zone of employees toward a HEPA, filtration or collection device.

17.0 SPECIFIC CONTROL METHODS FOR CLASS I WORK. In addition, Class I asbestos work shall be performed using one or more of the following control methods pursuant to the limitations stated below:

17.1 Negative Pressure Enclosure (NPE) Systems. NPE systems shall be used where the configuration of the work area does not make the erection of the enclosure infeasible, with the following specifications and work practices.

17.1.1 Specifications:

- The negative pressure enclosure (NPE) may be of any configuration;
- At least 4 air changes per hour shall be maintained in the NPE;
- A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the NPE as evidenced by manometric measurements;
- The NPE shall be kept under negative pressure throughout the period of its use; and
- Air movement shall be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or a collection device.

17.1.2 Work Practices:

- Before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches and smoke-tested for leaks, and any leaks sealed;
- Electrical circuits in the enclosure shall be deactivated, unless equipped with ground-fault circuit interrupters;

17.2 Glove Bag Systems. Glove bag systems shall be used to remove PACM and/or ACM from straight runs of piping with the following specifications and work practices.

17.2.1 Specifications:

- Glovebags shall be made of 6 mil thick plastic and shall be seamless at the bottom;

17.2.2 Work Practices:

- Each glovebag shall be installed so that it completely covers the

circumference of pipe or other structure where the work is to be done;

- Glovebags shall be smoke-tested for leaks and any leaks sealed prior to use;
- Glovebags may be used only once and may not be moved;
- Glovebags shall not be used on surfaces whose temperature exceeds 150 degrees⁰, unless the glovebags have been specifically designed for "hot work" and the manufacturer's information is included in your letter to OSHA requesting Alternative Control Methods;
- Prior to disposal, glovebags shall be collapsed by removing air within them using a HEPA vacuum;
- Before beginning the operation, loose and friable material adjacent to the glovebag/box operation shall be wrapped and sealed in two layers of six mil plastic or otherwise rendered intact;
- Where system uses attached waste bag, such bag shall be connected to collection bag using hose or other material which shall withstand pressure of ACM waste and water without losing its integrity;
- Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected; and
- At least two persons shall perform Class I glovebag removals.

17.3 Negative Pressure Glove Bag Systems. Negative pressure glove bag systems shall be used to remove ACM or PACM from piping.

17.3.1 Specifications:

- In addition to specifications for glove bag systems above, negative pressure glove bag systems shall attach a HEPA vacuum systems or other devices to bag to prevent collapse during removal;

17.3.2 Work Practices:

- G.C. Zarnas will comply with all of the work practices for glove bag systems as noted in this section.
- The HEPA vacuum cleaner or other device used to prevent collapse of bag during removal shall run continually during the operation; and
- Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.

17.4 Negative Pressure Glove Box Systems. Negative pressure glove boxes shall be used to remove ACM or PACM from pipe runs with the following specifications and work practices.

17.4.1 Specifications:

- Glove boxes shall be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal;
- A negative pressure generator shall be used to create negative pressure in system;
- An air filtration unit shall be attached to the box;
- The box shall be fitted with gloved apertures;
- An aperture at the base of the box shall serve as a bagging outlet for waste ACM and water;
- A back-up generator shall be present on site: and
- Waste bags shall consist of 6 mil thick plastic double-bagged before they are filled or plastic thicker than 6 mil.

17.4.2 Work practices:

- At least two persons shall perform the removal;
- The box shall be smoke tested prior to each use;
- Loose or damaged ACM adjacent to the box shall be wrapped and sealed in two layers of 6 mil plastic prior to the job, or otherwise made intact prior to the job; and
- A HEPA filtration system shall be used to maintain pressure barrier in box.

17.5 Small Walk-In Enclosures. A small walk-in enclosure, which accommodates no more than two persons (mini-enclosure) may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices.

17.5.1 Specifications:

- The fabricated or job-made enclosure shall be constructed of 6 mil plastic or equivalent; and
- The enclosure shall be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit.

17.5.2 Work practices:

- Before use, the mini-enclosure shall be inspected for leaks and smoke tested to detect breaches, and breaches sealed;
- Before reuse, the interior shall be completely washed with amended water and HEPA-vacuumed; and
- During use air movement shall be directed away from the employee's breathing zone within the mini-enclosure.

17.6 Alternative Control Methods for Class I work. Class I work may be performed using a control method which is not referenced in this section, or which modifies a control method referenced in this section, if the following provisions are complied with:

17.6.1 The control method shall enclose, contain or isolate the processes

or source of airborne asbestos dust, or otherwise capture or redirect such dust before it enters the breathing zone of employees;

- 17.6.2** A certified industrial hygienist or licensed professional engineer who is also qualified as a project designer shall evaluate the work area, the projected work practices and the engineering controls and shall certify in writing that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the planned control method will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria of the Standard.
- Where the TSI or surfacing material to be removed is 25 linear or 10 square feet or less, the evaluation may be performed by a "competent person", and may omit consideration of perimeter or clearance monitoring otherwise required.
 - The evaluation of employee exposure shall include and be based on sampling and analytical data representing employee exposure during the use of such method under worst-case conditions and by employees whose training and experience are equivalent to employees who are to perform the current job.

18.0 SPECIFIC CONTROL METHODS FOR CLASS II WORK

18.1 Control Methods for Class II Work. All Class II work, shall be supervised by a competent person. For all indoor Class II jobs, where G.C. Zarnas has not produced a Negative Exposure Assessment, or where during the job changed conditions indicate there may be exposure above the PEL or where G.C. Zarnas does not remove the ACM in a substantially intact state, G.C. Zarnas shall use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

- 18.1.1** Critical barriers shall be placed over all openings to the regulated area; or
- 18.1.2** G.C. Zarnas shall use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance monitoring which meets the criteria set out in the Asbestos Standard; and
- 18.1.3** Impermeable drop-cloths shall be placed on surfaces beneath all removal activity.

All Class II asbestos work shall be performed using the work practices and requirements set out above.

18.2 Additional Controls for Class II Work. Class II asbestos work shall also be

performed by complying with the work practices and controls designated for each type of asbestos work to be performed set out in this paragraph. Where more than one control method may be used for a type of asbestos work, G.C. Zarnas may choose one or a combination of designated control methods. Class II work also may be performed using a method allowed for Class I work, except that glove bags and glove boxes are allowed if they fully enclose the Class II material to be removed.

- 18.3 Vinyl and Asphalt Flooring Materials.** For removing vinyl and asphalt flooring materials which contain ACM or for which in buildings constructed no later than 1980, G.C. Zarnas has not verified the absence of ACM. G.C. Zarnas shall ensure that employees comply with the following work practices and that employees are trained in these practices:
- 18.3.1** Flooring or its backing shall not be sanded;
 - 18.3.2** Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) shall be used to clean floors;
 - 18.3.3** Resilient sheeting shall be removed by cutting with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited;
 - 18.3.4** All scraping of residual adhesive and/or backing shall be performed using wet methods;
 - 18.3.5** Dry sweeping is prohibited;
 - 18.3.6** Mechanical chipping is prohibited unless performed in a negative pressure enclosure, which meets the requirements of this Program;
 - 18.3.7** Tiles shall be removed intact, unless the employer demonstrates that intact removal is not possible;
 - 18.3.8** When tiles are heated and can be removed intact, wetting may be omitted; and
 - 18.3.9** Resilient flooring material including associated mastic and backing shall be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.
- 18.4 Roofing Materials.** For removing roofing material, which contains ACM, G.C. Zarnas shall ensure that the following work practices are followed:
- 18.4.1** Roofing material shall be removed in an intact state to the extent feasible;
 - 18.4.2** Wet methods shall be used where feasible;
 - 18.4.3** Cutting machines shall be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety;
 - 18.4.4** All loose dust left by the sawing operation must be HEPA vacuumed immediately;
 - 18.4.5** Unwrapped or unbagged roofing material shall be immediately lowered to the ground via covered, dust-tight chute, crane or hoist,

- or placed in an impermeable waste bag or wrapped in plastic sheeting and lowered to ground no later than the end of the work shift;
- 18.4.6** Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust; and
 - 18.4.7** Roof level heating and ventilation air intake sources shall be isolated or the ventilation system shall be shut down.
 - 18.4.8** Exempt From The Standard. The asbestos standard does not apply to asbestos-containing asphalt roof cements, coatings and mastics. This exemption followed a ruling by the court that there was a lack of substantial evidence that asphalt roof coatings and sealants containing asbestos posed a risk of asbestos exposure. While this ruling by the court affects OSHA, it does not necessarily affect any local or state agency, which may continue to regulate this activity.
- 18.5** Cementitious Asbestos-Containing Siding. When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM, G.C. Zarnas shall ensure that the following work practices are followed:
- 18.5.1** Cutting, abrading or breaking siding, shingles, or transite panels, shall be prohibited unless G.C. Zarnas can demonstrate that methods less likely to result in asbestos fiber release cannot be used;
 - 18.5.2** Each panel or shingle shall be sprayed with amended water prior to removal;
 - 18.5.3** Unwrapped or unbagged panels or shingles shall be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift; and
 - 18.5.4** Nails shall be cut with flat, sharp instruments.
- 18.6** Gaskets Containing Asbestos. When removing gaskets containing ACM, G.C. Zarnas shall ensure that the following work practices are followed:
- 18.6.1** If a gasket is visibly deteriorated and unlikely to be removed intact, removal shall be undertaken within a glovebag as described in this program;
 - 18.6.2** The gasket shall be thoroughly wetted with amended water prior to its removal;
 - 18.6.3** The wet gasket shall be immediately placed in a disposal container; and
 - 18.6.4** Any scraping to remove residue must be performed wet.
- 18.7** All Other Class II Asbestos-Containing Materials. When performing any other Class II removal of asbestos containing material for which specific controls have not been listed in paragraph 18.6 of this section, G.C. Zarnas

shall ensure that the following work practices are complied with:

18.7.1 The material shall be thoroughly wetted with amended water prior and during its removal;

18.7.2 The material shall be removed in an intact state unless G.C. Zarnas demonstrates that intact removal is not possible;

18.7.3 Cutting, abrading or breaking the material shall be prohibited G.C. Zarnas can demonstrate that methods less likely to result in asbestos fiber release are not feasible; and

18.7.4 Asbestos-containing material removed, shall be immediately bagged or wrapped, or kept wetted until transferred to a closed receptacle, no later than the end of the work shift.

18.8 Alternative Control Methods for Class II Work. Instead of the work practices and controls listed in paragraph 18.2 through 18.4 of this section, G.C. Zarnas may use different or modified engineering and work practice controls if the following provisions are complied with:

18.8.1 G.C. Zarnas shall demonstrate by data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used, that employee exposure will not exceed the PELs under any anticipated circumstances; and

18.8.2 A competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall certify in writing, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this standard. The evaluation shall include and be based on data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees whose training and experience are equivalent to employees who are to perform the current job.

19.0 **SPECIFIC CONTROL METHODS FOR CLASS III WORK.** The following work practices and engineering controls will be used for Class III asbestos work.

19.1 Class III Work Control Methods. Class III asbestos work shall be conducted using engineering and work practice controls, which minimize the exposure to employees performing the asbestos work and to bystander employees.

19.1.1 The work shall be performed using wet methods;

19.1.2 To the extent feasible, the work shall be performed using local exhaust ventilation;

19.1.3 Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or

surfacing material, G.C. Zarnas shall use impermeable drop-cloths, and shall isolate the operation using mini-enclosures or glove bag systems pursuant to this program;

- 19.1.4** Where G.C. Zarnas does not produce a "Negative Exposure Assessment" for a job, or where monitoring results show the PEL has been exceeded, G.C. Zarnas shall contain the area using impermeable drop-cloths and plastic barriers or their equivalent, or shall isolate the operation using a control system listed in and in compliance with this program; and
- 19.1.5** Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where G.C. Zarnas has not produced a "Negative Exposure Assessment" or where monitoring results show a PEL has been exceeded, shall wear respirators which are selected, used and fitted pursuant to all G.C. Zarnas programs and policies.

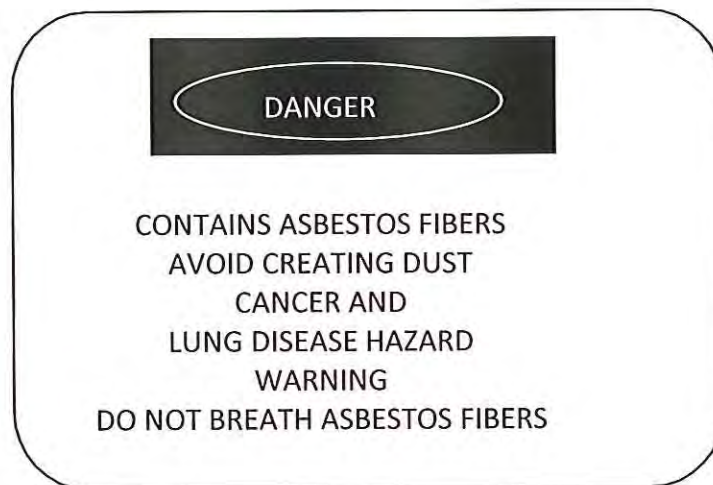
20.0 SPECIFIC CONTROL METHODS FOR CLASS IV WORK

20.1 Class IV Asbestos Work. Class IV asbestos jobs shall be conducted by employees trained pursuant to the asbestos awareness training program. In addition, all Class IV jobs shall be conducted in conformity with the requirements set out in this program, mandating wet methods, HEPA vacuums, and prompt clean up of debris containing ACM or PACM. Employees cleaning up debris and waste in a regulated area where respirators are required shall wear respirators, which are selected, used and fitted pursuant to all G.C. Zarnas programs and policies. Employers of employees who clean up waste and debris in, and employers in control of, areas where friable thermal system insulation or surfacing material is accessible, shall assume that such waste and debris contain asbestos.

21.0 PACKAGING ASBESTOS WASTE FOR DISPOSAL. Unless otherwise required by the contract document, G.C. Zarnas will place the asbestos waste into appropriately labeled 6-mil thick impermeable polyethylene plastic disposal bags. The bags should not be filled more than 40 percent by volume to avoid tearing. The ACM waste must be wetted with sufficient water to insure that it is adequately wet. Prior to gooseneck sealing, the bag should be collapsed to remove any trapped air that may later contribute to bursting. After the exterior of the sealed bag is wet cleaned to remove any gross material, it is then double bagged and sealed by goosenecking and taping. The bagged and labeled ACM waste will then be stored in a secured container to await transport to the disposal site. Asbestos waste can not be mixed with any other type of construction waste from the site. Personnel handling ACM waste outside of the containment, must wear, as a minimum, protective clothing and a HEPA

equipped half-mask, air-purifying respirator.

21.1 OSHA Warning Labels. In compliance with the OSHA Asbestos Standard, 29 CFR 1926.1101, the OSHA Hazard Communication Standard, 29 CFR 1926.59, and the EPA NESHAP Standard, all of which require each employer to ensure that all containers of hazardous chemicals in the workplace are labeled, tagged, or marked with the identity of the hazardous chemical contained therein, and an appropriate warning of the hazards of the chemical, all asbestos-containing waste disposal bags utilized by G.C. Zarnas will be appropriately marked as follows:



These labels must be three (3) inches high by five (5) inches wide and conform to the requirements specified in 29 CFR 1910.145 for danger labels or signs.

21.2 Generator Labels. NESHAPS requires that each bag of asbestos-containing material that is to be transported off of the facility site, contain a visible label identifying the name of the waste generator (Host Employer) and the location at which the waste was generated. This generator label must either be printed on the outside of the bag or it must be a separate label attached to the bag, or it can be a separate label that is inserted between the two poly bags if the outside bag is a clear bag that would allow the label to be read without opening the bag.

21.3 DOT Transportation Labels. In addition to the warning labels required by both OSHA and the EPA, the United States Department of Transportation (DOT) requires a "CLASS 9" warning label on each bag of asbestos-



containing materials that is transported away from the removal site. The label should be as follows:

The "CLASS 9" (Miscellaneous Hazardous Materials) label should be approximately 100 mm by 100 mm in size and in addition to complying with Section 172.407, the background on the CLASS 9 label must be white with seven black vertical stripes on the top half. The black vertical stripes must be spaced, so that, visually, they appear equal in width to the six white spaces between them. The lower half of the label must be white with the class number "9" underlined and centered at the bottom.

- 21.4 Adequately Wet.** NESHAPS describes the wording adequately wet as meaning to sufficiently mix or penetrate the ACM with a liquid to prevent the release of particulates. An adequate amount of the liquid control device (amended water) must be mixed with the ACM to form a slurry. G.C. Zarnas will make certain that enough water is in each bag of ACM to readily enable an observer to view the water without having to open the bag.
- 21.5 Leak-Tight Seal.** NESHAPS states that each bag containing asbestos materials must have a "leak-tight" seal. This means that solids or liquids cannot escape or spill out. It also means dust-tight. Since NESHAPS also requires that the bagged ACM be sufficiently wet, a proper seal must also ensure that the water in the bag does not have sufficient air to evaporate thereby allowing the fibers to dry out and become airborne. In order to accomplish this "leak-tight" seal, the two bags must be individually "goose neck" sealed. This is done by twisting the top of the bag to form a long twist and then bending over the top of the twisted portion and taping it to the bottom of the twisted portion, thereby forming the "goose neck." In doing this, a small amount of air is trapped in the goose neck, which provides a leak-tight seal. Each of the two bags must be separately sealed in this manner.
- 21.6 Secured Storage Facilities.** Drums, bags and/or wrapped components of ACM that have been removed from the immediate work area and are being temporarily stored while awaiting transportation to the disposal site, must be stored in an enclosed and lockable storage area, truck, or dumpster. These storage areas must be locked when unattended. The enclosed storage areas must be free of debris and lined with 6-mil poly sheeting to prevent contamination from leaking or spilled containers.
- 22.0 DISPOSAL OF ASBESTOS-CONTAINING MATERIALS.** Friable asbestos-containing waste material and debris, which is packaged in accordance with the provisions of this Procedure, may be disposed of at any designated sanitary landfills when certain precautions are taken. These include notifying the appropriate Environmental Protection Agency regional office, and, where required, obtaining

the necessary permits from appropriate state and/or local agencies.

22.1 ACM Waste for Transport. Unless otherwise required by the contract document, G.C. Zarnas will not be required to use containerized waste disposal methods.

Bagged asbestos-containing waste, which is ready for disposal, will not be stored in the open outside of the work area. These bags will either be left in a secured staging room, stored in a locked area designated by the Host Employer, or taken directly from the work area to a truck or dumpster which is closed and capable of being locked. Care must be exercised before and during transport to insure that no unauthorized persons can have access to the ACM waste material.

Waste disposal bags that are not containerized will not be transported in open trucks. Double bagged material may be transported in open trucks if they are first loaded into container drums and the drums are then sealed. These drums must then be labeled with the same warning label as the waste disposal bags.

Uncontaminated drums may be reused, but any drums that have been contaminated, must be treated as asbestos-containing waste and disposed of in accordance with these Guidelines.

When possible, the sanitary landfill operator should be notified at least twenty-four hours in advance of the transport and advised of the quantity of material to be delivered.

22.2 Marking Transport Vehicle. When ACM waste is transported by vehicle to a waste site, the vehicle being used to transport the waste must be marked during the loading and unloading of the waste in accordance with 40 CFR 61.150 (c). Although the EPA's NESHAP 40 CFR 61.149 (d)(1)(i) specifies the exact wording to be used for this marking of the transport vehicle, a recent interpretation by the EPA now allows for the use of the OSHA warning sign identified in this program.

22.3 Waste Shipment Record. On all asbestos-containing waste material transported off of the facility site, G.C. Zarnas will generate a Waste Shipment Record. This Record follows the outline prescribed by NESHAP in 40 CFR 61.150 (d)(1). All entries on the Waste Shipment Record must be complete, and a copy retained by the generator, the hauler, and the landfill, the Host Employer and G.C. Zarnas. The record must be signed by the operator, by each transporter, and by the waste disposal site Host Employer or operator. A written report must be made to the local, state or federal EPA office if a copy of the completed Waste Shipment Record, signed by the disposal site operator, has not been returned to the waste generator within 45 days of the date the waste was accepted by the initial transporter. At the completion of the project, G.C. Zarnas' copy must be maintained as a part of the permanent job file.

22.4 At the Disposal Site. At the disposal site, the sealed waste bags should be

carefully removed from the truck. If any of the bags are broken or damaged, they should be left on the truck and then placed into two more clean, unbroken disposal bags before being removed from the truck. In this case, the entire bed of the truck must then be cleaned and decontaminated. Receipts from the landfill for the materials disposed of must be retained in compliance with regulatory requirements.

23.0 WORK AREA CLEANUP PROCEDURES. This section details the cleaning and decontamination procedures to be followed during the final cleanup of the work area, including the decontamination of the air in the work area which has been contaminated by the elevated airborne asbestos fiber levels generated during the abatement activities.

It includes the cleaning and decontamination of all surfaces (ceilings, walls, floors) of the work area and all furniture and equipment in the work area. In order to accomplish this, the cleaning and decontamination process will be conducted in a series of cleanings. These cleanings apply to that portion of the abatement project in which all visible asbestos-containing material has been removed from the substrate and the substrate has been brushed and wet wiped. During this entire cleaning process, the air filtering units must be maintained in continuous operation.

23.1 Final Cleaning. After the removal of all visible accumulations of asbestos material and debris, all surfaces in the work area and the decontamination units should be thoroughly cleaned with HEPA filtered vacuums or wet wiped. The decontamination units must also continue to remain in operation.

A second cleaning should now be conducted, again using HEPA filtered vacuums and/or wet wiping all surfaces. When this second cleaning has been completed, G.C. Zarnas should conduct a visual inspection of the work area and the decontamination units, to ensure that all areas are free of visible asbestos fibers. With the air filtering units and the decontamination units remaining in operation, all of the remaining poly should be stripped from the work area, leaving only the critical barrier intact.

At the time of the second cleaning, all remaining tools and equipment remaining in the work area and the decontamination units should be decontaminated by HEPA by vacuuming and/or wet wiping and then removed from the area. Once this is completed, the area is now ready to be visually inspected by the Host Employer, the Host Employer's representative, or a representative of the independent air monitoring firm. This individual should be identified in the contract document.

If the results of the inspection are satisfactory, the individual conducting the inspection should release the area for encapsulation. This involves applying a sealant to the substrate and the remaining poly sheeting to "lock down" any tiny invisible fibers which might remain. The mist, which occurs

during encapsulation, helps in settling and sticking down the fibers, which are still airborne. An adequate time period should be established to allow the sealant to dry before conducting additional air sampling.

Special attention must be paid to the Material Safety Data Sheet (MSDS) of the encapsulant to be used, since the nature of some encapsulants may effect the requirements for respiratory protection. Vapors that are given off during the application of some encapsulants must be taken into account when selecting respiratory equipment if other than supplied-air respirators are used.

Air monitoring of the work area and the decontamination units should now be conducted to determine the fiber count in these areas. If specified in the contract document, this phase of the air sampling will also be conducted by the independent air monitoring firm retained by G.C. Zarnas throughout the project.

If the results of this air sampling show a count of 0.01 or less fibers per cubic centimeter of air, the work area and decontamination units are ready for closeout. If however, there are still sufficient asbestos fibers airborne in the containment area to require additional cleaning, G.C. Zarnas may elect to perform an aggressive cleaning. In any case, G.C. Zarnas will continue to perform cleaning operations within the work area and the decontamination units until an acceptable level of decontamination, as specified in the contract document, is obtained.

23.1.1 Aggressive Cleaning: Aggressive cleaning can be performed by blowing all surfaces with a small motorized blower, such as a Leaf Blower, starting at the work area air inlet(s), if any, and proceeding methodically toward the air filtering units(s). Care must be taken to proceed at a pace that is slow enough to allow the general air movement in the room to keep the fiber "cloud" ahead of the blowing activity, so that fibers are not re-deposited on cleaned surfaces. This type of induced air movement will tend to "capture" all of the remaining airborne fibers and trap them in the air filtering units filter media, where they can be permanently removed.

23.2 Removal of Temporary Enclosures. Upon acceptance of the air monitoring results, G.C. Zarnas will now begin dismantling operations of the remaining work area, decontamination units, and critical barriers. Although the area has been tested "clean", all debris from the removal of these areas will be packaged in disposal bags or wrapped and sealed in poly for disposal as contaminated waste.

24.0 AIR MONITORING. This section describes the air monitoring carried out by G.C. Zarnas to ensure the protection of asbestos abatement workers and to verify that the building beyond the work area remains uncontaminated. Unless the contract document specifies that air monitoring services are to be

provided by the Host Employer, G.C. Zarnas will engage the services of a competent, independent air monitoring firm to perform sufficient air sampling to accurately determine the airborne concentrations of asbestos fibers to which the asbestos workers may be exposed.

The air monitoring firm selected by the G.C. Zarnas will have all of the professional qualifications and certifications necessary to collect air samples, conduct OSHA required analysis, provide timely results, and implement specific quality control procedures as set forth in Appendix A of the Asbestos Standard, 29 CFR 1926.1101 and Section 9-2 Air Monitoring Guidelines of the Corporate Safety Program. All work performed by the selected company must be in accordance with this mandatory Appendix.

- 24.1 Exception to Air Monitoring.** The exception to the requirement for conducting daily monitoring that is representative of the exposure of each employee in the work area, is when all workers in the work area are equipped with supplied-air respirators operated in the positive pressure mode.
- 24.2 Termination of Air Monitoring.** Termination of daily air monitoring will only be in compliance with the requirements of all G.C. Zarnas programs and policies.
- 24.3 Employee Notification.** Immediately upon receipt of the air monitoring results, G.C. Zarnas will either post the results at the job site or will mail a copy of the results to the employees involved. When results are received after the completion of the job, or after the employees who were involved in the sampling have left the job site, copies of the results will be mailed directly to the employee as soon as possible.
- 24.4 Observation of Air Monitoring.** G.C. Zarnas will provide affected employees, or their designated representatives, an opportunity to observe the monitoring of employee exposure within the work area. When observation of this monitoring requires entry into the work area, the observer will be required to comply with all of G.C. Zarnas' safety procedures for entry into the work area. This includes such procedures as a medical examination, respirator fit-testing, respirator and asbestos training, the use of protective coveralls, etc.
- 25.0 DEMOBILIZATION.** The air filtering units should be turned off, sealed in poly and transported to the next project. All debris, used cleaning materials, unsalvageable materials used for the enclosures, and any other remaining materials should be disposed of as contaminated waste. All sealed and labeled bags containing contaminated waste will then be removed from the Host Employer's property by approved transport methods. All contaminated waste, which has been removed from the project during the demobilization operation, will be disposed of at the selected waste disposal site. The transport vehicles will then be decontaminated and the protective clothing

worn by the disposal workers will be included in the disposal process.

- 26.0 FINAL DOCUMENTATION.** Unless project documentation has been submitted to the Host Employer, or the Host Employer's representative on a timely basis throughout the length of the project, or unless otherwise stipulated by the contract document, final documentation will be submitted to the Host Employer, or the Host Employer's representative for review, acceptance and permanent file.



ASSURED GROUNDING

3.1 PURPOSE

- 3.1.1 The purpose of this policy is to establish assured grounding procedures and guidelines to eliminate injuries resulting from possible malfunctions, improper grounding and/or defective electrical cords.

3.2 RESPONSIBILITIES

3.2.1 Competent person

- 3.2.1.1 Identify existing and predictable hazards in the surrounding area
- 3.2.1.2 Identify working conditions which are unsanitary, hazardous or dangerous to workers
- 3.2.1.3 Authorized to take prompt corrective measures to eliminate them
- 3.2.1.4 Responsible for tests on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure and cord and plug connected equipment repaired to be grounded
- 3.2.1.5 Designated to implement the assured equipment grounding conductor program

3.2.2 Supervisor

- 3.2.2.1 All operations are in compliance with relevant rules and regulations
- 3.2.2.2 Personnel are properly trained as appropriate for their position and responsibilities
- 3.2.2.3 Make available appropriate equipment to secure high safety and quality performance
- 3.2.2.4 Conduct maintenance according to schedule and inspections at appropriate intervals

3.2.3 Employee

- 3.2.3.1 Risk assessment and job safety analysis
- 3.2.3.2 Manufacturer's recommended guidelines
- 3.2.3.3 Stop Work Authority

3.3 GENERAL SAFETY

- 3.3.1 ZARNAS COMPANIES will establish and implement an assured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the permanent wiring of the building or structure and equipment connected by cord and plug which are available for use or used by employees. This policy will apply to all construction sites not equipped with ground fault circuit interrupters in accordance with OSHA standard 1926.400.

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- 3.3.2 All electrical equipment used in hazardous locations will be approved for Class 1, Division 1 use, as outlined in the National Electric Code and OSHA regulations.
- 3.3.3 Electrical cords and plugs must be inspected before each use for damage and removed from service if damage is detected.
- 3.3.4 All portable equipment must be plugged into a GFCI receptacle to protect the user against shorts and current leakage.
- 3.3.5 Never carry electric tools by their cord.
- 3.3.6 Never jerk a cord to remove the plug from a receptacle.
- 3.3.7 Guard all electrical cords and plugs from damage.
- 3.3.8 The use of UL listed double insulated electric tools is encouraged.
- 3.3.9 Avoid running extension cords along the ground where they could become damaged or cause a tripping hazard.
- 3.3.10 Never stand in water when using an electrical appliance.
- 3.3.11 Portable electrical extension cables will not exceed 98 feet in length.
- 3.3.12 When possible, electric cables will be routed overhead to prevent tripping hazards and to minimize damage to the cables and to other equipment. Cables that must be run across the ground/deck will be protected from damage while not creating a trip hazard for personnel.
- 3.3.13 All portable electric equipment and cables will be inspected prior to use. Any equipment which has not met the requirements of this program will not be available or permitted to be used. Damaged items will not be used until repaired.
- 3.3.14 Employees and subcontractors must not use electrical equipment that can create sparks or be sources of ignition near flammable gases or liquids. If electrical equipment must be used in these areas, only explosion proof or intrinsically safe equipment and tools will be used.
- 3.3.15 Portable electric equipment will be registered and have an inspection tag attached. Employees discovering portable electrical equipment in such a condition will tag this equipment as *OUT OF SERVICE* and report the condition to an immediate supervisor.
- 3.3.16 Only competent personnel are permitted to undertake maintenance, installation and repair of electrical equipment and will follow the appropriate lockout/tagout procedure.
- 3.3.17 Report electrical shocks to the immediate supervisor and the safety director for investigation.
- 3.3.18 Conductive items of clothing or jewelry will not be worn unless they are rendered nonconductive by covering, wrapping or other means of insulation.
- 3.3.19 Handling of long dimensional conductor objects requires the installation of guards, insulation and material handling techniques to minimize exposure hazards.



3.3.20 All efforts will be taken to de-energize and ground overhead lines.

3.4 ASSURED GROUNDING PROCEDURES

3.4.1 Employers must have a written description of their assured equipment grounding program at each jobsite that includes specific procedures.

3.4.2 If a permanently wired receptacle (not equipped with GFCI protection) is used for temporary electric power in a construction project, GFCI protection must be provided at the user end. Portable plug in and cord type GFCIs are probably the most practical devices for construction workers who use cord sets for temporary power when there is no protection at the source.

3.4.2.1 Protection is a function or state, not equipment. If there is effective protection for the worker, location of equipment that provides protection is not important.

3.4.3 GFCI protection may be anywhere on the circuit as long as it works effectively to protect the worker. Protection may be for the entire circuit, the outlet receptacle or the extension cord.

3.4.4 GFCI can be critical to workers in wet environments. The rule for GFCI does not exempt work with intrinsically safe or double insulated tools.

3.4.5 For receptacles with more than 125 volts, single phase or more than 30 amp capacity, use GFCI protection or have a program that assures equipment is grounded.

3.4.5.1 Equipment grounding conductors tested for continuity and electrically continuous.

3.4.5.2 Electrical equipment will be suitably earthed/grounded. Where it cannot be earthed/grounded, it will be double insulated.

3.4.6 All portable electrical distribution outlets used for hand tools will comply with 29 CFR 1926.404 Wiring Design and Protection as a minimum. This will include the use of Earth Leakage Protection Devices (ELPD) or GFCIs.

3.4.7 Only competent personnel are permitted to operate machinery, to start and operate electrically driven equipment and to energize or de-energize electrical circuits or switchboards.

3.4.8 Protective shields, protective barriers or insulating materials will be used when working in confined or closed work spaces where electrical hazards may exist.

3.5 INSTALLATION

3.5.1 All 120 volt, single phase, 15- and 20- ampere receptacles will be of the grounding type and their contacts will be grounded by connection to the equipment grounding conductor of the circuit supply the receptacle in accordance with the applicable requirements of the National Electrical Code.

3.5.2 All 120 volt cord sets (extension cords) will have an equipment grounding conductor which will be connected to the grounding contacts of the connector(s) on each end of the cord.



- 3.5.3 The exposed concurrent carrying metal parts of the 120 volt cord and plug connected tools and equipment that are likely to become energized will be grounded in accordance with the applicable requirements of the National Electrical Code.
- 3.5.4 Approach distances will be set for unqualified employees – 20 feet, see Table A of 1926 Subpart CC. When a qualified person is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person may not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table A of 1926 Subpart CC unless:
 - 3.5.4.1 The person is insulated from the energized part (gloves, with sleeves if necessary, rated for the voltage involved are considered to be insulation of the person from the energized part on which work is performed).
 - 3.5.4.2 The energized part is insulated both from all other conductive objects at a different potential and from the person or the person is insulated from all conductive objects at a potential different from that of the energized part.

3.6 INSPECTIONS

- 3.6.1 A daily inspection will be made of the following electrical equipment to determine any external defects or indications of internal damage prior to use:
 - 3.6.1.1 Cord sets
 - 3.6.1.2 Attachment cap
 - 3.6.1.3 Plug and receptacle of cord sets
 - 3.6.1.4 Any equipment connected by cord and plug, with the exception of cord and plug sets that are fixed and not exposed to damage such as deformed or missing plug or insulation damage.
- 3.6.2 A daily visual inspection will be made of the following to determine any external defects or indications of internal damage prior to use:
 - 3.6.2.1 Damaged items will not be used until repaired.
 - 3.6.2.2 Make an effort to prevent cables from being kinked, knotted, cut or crushed.
 - 3.6.2.3 Do not use cables where they are exposed to heat, chemicals or moisture unless they are specially designed for such conditions.
 - 3.6.2.4 Do not remove ground/earth wires from portable extension cables.
- 3.6.3 Any equipment deemed damaged will be tagged *DO NOT USE* and will be removed from service and either repaired and tested or discarded.
- 3.6.4 Equipment that has not been inspected and found to be in proper working order will not be used on any worksite.



3.7 TESTING EQUIPMENT

3.7.1 Equipment used to conduct the required testing may consist of the following approved devices:

3.7.1.1 Continuity tester (lamp and battery/bell and battery)

3.7.1.2 Ohmmeter

3.7.1.3 Receptacle tester

3.8 TESTING SCHEDULE

3.8.1 Each receptacle and attachment cap or plug will be tested for correct attachment of the equipment grounding conductors. The equipment grounding conductor will be connected to its proper terminal:

3.8.1.1 Before each use

3.8.1.2 Before equipment is returned to service following any repairs

3.8.1.3 Before equipment is used following any incident that damaged or had the potential to damage the cord

3.8.1.4 At intervals not to exceed 3 months

3.8.2 The testing must include:

3.8.2.1 All equipment grounding conductors will be tested for continuity and will be electrically continuous.

3.8.2.2 Each receptacle and attachment cap or plug will be tested for correct attachment of the equipment grounding conductors.

3.8.2.3 The equipment grounding conductor is connected to its proper terminal.

3.8.3 Cords, plugs and receptacles which are fixed and not exposed to damage will be tested at intervals not to exceed 6 months.

3.9 RECORDKEEPING AND TAGGING

3.9.1 Tests performed as required by this program will be recorded with the identity of each receptacle, cord set, cord with plug. Equipment that passed the test and will indicate the last date tested or interval for which is was tested.

3.9.2 This record will be kept by means of logs, color coding or other effective means and will be maintained until replaced by a more current record. These records will be made available at the jobsite for inspection.

3.9.3 Tests conducted according to this procedure will be recorded, showing the following information:

3.9.3.1 Identity of each receptacle, cord set and cord and plug connected equipment.

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- 3.9.3.2 All information will be kept on *Inspection Log* sheets, on the worksite and will be available for inspection by the assistant secretary and any affected employees.
- 3.9.3.3 Equipment tested and found in compliance with this procedure will be identified by a tag, which shows the following information:
 - 3.9.3.3.1 Date of inspection
 - 3.9.3.3.2 Name of inspector
- 3.9.4 Management retains the authority to designate that certain jobs comply with regulation 1926.400 by use of ground fault circuit interrupters in lieu of the program established above. A copy of the completed forms will be kept on each applicable jobsite for inspection purposes.
- 3.9.5 A copy of this policy will be at the jobsite for inspection and copy by OSHA officials and any affected employee.

3.10 TRAINING

- 3.10.1 Employees will be trained in all safety related work practices that pertain to their respective job assignments.
- 3.10.2 If ground fault circuit interrupters cannot be used then one or more competent person(s) must be trained and designated to carry out the electrical safety.
- 3.10.3 All employees and contractors authorized and assigned to work on electrical circuits will be trained and prepared to perform cardiopulmonary resuscitation (CPR).

BEHAVIOR BASED SAFETY

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BEHAVIOR BASED SAFETY

4.1 PURPOSE

- 4.1.1 The purpose of this policy is to provide employees with requirements and guidance to participate in ZARNAS COMPANIES' behavior based safety (BBS) program.

4.2 RESPONSIBILITIES

- 4.2.1 Management and the safety director are responsible for development, implementation and management of the BBS process to adapt it to the unique needs of the jobsite.
- 4.2.2 Supervisor and foreman
 - 4.2.2.1 Support the process with a positive attitude, by speaking at toolbox meetings and encouraging observers to do their observations.
 - 4.2.2.2 Provide safety committee members and observers the time necessary to participate.
 - 4.2.2.3 Allow observations to be performed in their work area without interruptions.
 - 4.2.2.4 Follow up on feedback provided by the safety committee.
 - 4.2.2.5 Attend the training course and provide suggestions that will improve the process.
 - 4.2.2.6 Be a safety role model.
 - 4.2.2.7 Take necessary actions to support the implementation of any action plans.
 - 4.2.2.8 Use information obtained from observation cards to generate topics for safety meetings.
- 4.2.3 Employee
 - 4.2.3.1 Participate in the observation process and be open to receiving feedback.
 - 4.2.3.2 Treat observers with courtesy and respect.
 - 4.2.3.3 Monitor while performing normal work tasks.
 - 4.2.3.4 Participate in the training.
 - 4.2.3.5 Perform observations regularly providing quality data and good quality comments.
 - 4.2.3.6 Stop any IDLH situations and use a non-BBS process the issue.
 - 4.2.3.7 Maintain anonymous nature and be consistent in the observation process.
 - 4.2.3.8 Report the true findings of the observations.
 - 4.2.3.9 Do not become enforcers of policy during observations.

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4.2.4 Safety director

- 4.2.4.1 Support the goals and objectives of the BBS process.
- 4.2.4.2 Encourage, promote, provide support and acquire resources needed.
- 4.2.4.3 Address the concerns and suggestions of field personnel.
- 4.2.4.4 Collect all observation data cards.
- 4.2.4.5 Enter data into BBS database.

4.3 EXPECTATIONS

- 4.3.1 ZARNAS COMPANIES has developed and implemented company safety programs and policies intended to achieve total employee safety. ZARNAS COMPANIES recognizes that a written set of instructions or verbal mandates are ineffective if workers do not understand or choose to supersede them. It is important that employees remain focused on daily job activities and pay special attention to non-routine tasks that they will perform. For the purpose of employee familiarization and association, ZARNAS COMPANIES BBS program.
- 4.3.2 ZARNAS COMPANIES has developed this program to create a foundation from which subsequent job related decisions and actions are based under the following guidelines.
 - 4.3.2.1 Commit to assessing critical behaviors by listing them on an observation card. Critical behaviors will be taken from historical incident data as well as observed behavior.
 - 4.3.2.2 Observations of person(s) and their behavior(s).
 - 4.3.2.3 The person being observed should be anonymous.
 - 4.3.2.4 Who is doing the observing.
 - 4.3.2.5 What is the work being done.
 - 4.3.2.6 Where is the work being done.
 - 4.3.2.7 When is the work being done.
 - 4.3.2.8 Description of unsafe/safe behaviors observed.
 - 4.3.2.9 Feedback from employee explaining unsafe behavior.
 - 4.3.2.10 Recommendation for action from observer, as needed.
- 4.3.3 Data will be maintained for a period of not less than one year from the date of the observed activity.
- 4.3.4 Any hazardous condition identification will be addressed on the JSA or as part of remediation plans pursuant to a facility/site inspection.
- 4.3.5 PPE, body positioning, tools and equipment will be included, at minimum, on the observation card.



4.4 ACTION PLAN

- 4.4.1 An appropriate action plan will be created to address unsafe behavior. Action planning will include:
 - 4.4.1.1 Evaluate unsafe behaviors from trend analysis and prioritize.
 - 4.4.1.2 Develop action plan for unsafe behaviors based on comments and feedback from cards.
 - 4.4.1.3 Designate responsible parties and timeframes within the action plan.
 - 4.4.1.4 Define who is responsible for action planning.
 - 4.4.1.5 Ensure management support.
- 4.4.2 Action planning can occur at all levels from management to the field level.
- 4.4.3 Consider having only one or two action plans open at a time.
- 4.4.4 Refer to archived action plans for ideas for new action plans.
- 4.4.5 Consider defining what success is with each action plan – how do you know your action plan has done what it is supposed to do?

4.5 DATA COLLECTION

- 4.5.1 ZARNAS COMPANIES will use data collected from each observation to perform a trend analysis. This process will include:
 - 4.5.1.1 Input safe and unsafe behaviors from cards.
 - 4.5.1.2 Categorize behaviors for easier trending.
 - 4.5.1.3 Periodically complete a trend analysis, as appropriate, every six months minimum.
 - 4.5.1.4 Define steps for communicating trend analysis to employees and management.

4.6 FEEDBACK AND OBSERVATION

- 4.6.1 ZARNAS COMPANIES will, upon completion of an observation, will have the *observing employee* discuss with the *observed employee*, elements of the observation for purpose of attaining feedback. The observing employee will:
 - 4.6.1.1 Review the observation with the observed employee.
 - 4.6.1.2 Start with a positive comment – reinforce safe behaviors observed, first.
 - 4.6.1.3 Describe and discuss what was unsafe.
 - 4.6.1.4 Ask for explanation of unsafe behavior with open-ended questions.
 - 4.6.1.5 Re-emphasize no consequence to observed employee.

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4.7 FOLLOW UP

- 4.7.1 Action plans are carried out over the course of a set time period. Follow up is necessary to ensure the closure of all actions listed with the action plan. The follow up process will include:
 - 4.7.1.1 Define a frequency for review for action plans with a minimum of every six months.
 - 4.7.1.2 Assign accountability for closeout of action plans within the organization.
 - 4.7.1.3 Archive action plans for a minimum of one year.
 - 4.7.1.4 Include observation program and action plans in internal audits.
- 4.7.2 Review archived action plans for lessons learned periodically over the course of the review period.
- 4.7.3 Consider defining what success is with the overall observation program – how to know if observation program is working? Do not use quota for observation cards submitted as a measure of success.
- 4.7.4 ZARNAS COMPANIES is expected to develop a process to ensure quality of their own observation process (ex. internal audits, records review, etc.)

4.8 TRAINING

- 4.8.1 The training program for employees affected by the BBS program will define who is trained and how much – general employee awareness, ensure that all employees involved in the process are trained in the classroom and on the job as to how decisions effect behavior and the impact those decisions have on working safely.
- 4.8.2 Training will also include a review of these specific areas:
 - 4.8.2.1 How to conduct the observation.
 - 4.8.2.2 Program objectives and incident metrics to determine if goals and objectives are met.
 - 4.8.2.3 How to complete the observation form.
 - 4.8.2.4 What do the behaviors mean?
 - 4.8.2.5 Feedback training and role play (mentoring and coaching).
 - 4.8.2.6 Employees should be aware they may be observed at any time.
- 4.8.3 ZARNAS COMPANIES will ensure employee training includes elements pertaining to management, new employee and refresher training. The company will also incorporate previous observation data information during refresher training.



ZARNAS

BEHAVIOR BASED SAFETY OBSERVATION FORM

Your concerns for safety and suggestions as how to improve our safety program are important to ZARNAS COMPANIES Use this form to submit safety improvement input and/or a BBS safety observation. Your name is optional and the name of the person being observed is not to be used. This information will be forwarded to the safety director and used to continually improve our safety system and conditions.

IMPROVEMENT INPUT (CHECK ALL THAT APPLY)

- BBS Observation
- Unsafe Act
- Unsafe Condition
- Recognition
- Environmental

Employee/Observer Input

Employee's Action Taken or Recommendation

Supervisor or Management Action Taken

SAFETY OBSERVATION CRITICAL FACTORS

S=SAFE C=CONCERN

PPE/Procedures/Methods			Body Position/Mechanics			Slips/Trips			Equipment/Work Environment		
S	C	Eye & Head	S	C	Proper Position	S	C	Proper Footwear	S	C	SDS (if needed)
S	C	Hand & Body	S	C	Ask for Help	S	C	Aware of Hazards	S	C	Lock Out
S	C	Footwear	S	C	Use Dolly	S	C	Prompt Clean Up	S	C	Tools are Safe
S	C	Trained on Task	S	C	Smaller Loads	S	C	Tripping Hazards	S	C	Adjacent Work
S	C	Work Permit/JSA	S	C	Not Twisting Body	S	C	Not Rushing	S	C	Signage if Needed
S	C	Equipment	S	C	Get Close to Item	S	C	Step Conditions	S	C	Spill Control

Observer's Feedback (Given to other employee)

Location: _____ Observer Name (optional) : _____ Date: _____

Turn this form in to your supervisor for review.

BENZENE AWARENESS

Revision Date: 05/2015



BENZENE AWARENESS

5.1 PURPOSE

- 5.1.1 The purpose of this policy is to define work practices, administrative procedures and engineering controls to protect employees exposed to benzene concentrations above the OSHA action level.
- 5.1.2 ZARNAS COMPANIES employees are not to work in benzene exposure areas. Once aware of potential exposure to benzene, immediately stop work and notify a supervisor. The supervisor is then responsible to inform the office for further information, but not allow work to proceed until the exposure to benzene has been abated. This also applies to multi-contractor worksites where ZARNAS COMPANIES personnel are exposed to benzene due to inadequate procedures.

5.2 CHARACTERISTICS

- 5.2.1 Benzene liquid is highly flammable and water soluble. It has a boiling point of 176° F and a flash point of 12° F. The flammable limits in air are 1.3% for the low end and 7.5% for the high end. Its vapors can form explosive mixtures.
- 5.2.2 Benzene is clear, colorless liquid with a sweet odor. The odor of benzene does not provide adequate warning of its hazard.
- 5.2.3 Benzene vapors are heavier than air; thus the vapors may travel along the ground.

5.3 EXPOSURE AND HEALTH EFFECTS

- 5.3.1 Benzene can affect your health if you inhale it or if it comes in contact with your skin or eyes. Benzene is also harmful if swallowed. If benzene has been swallowed and worker is conscious, do not induce vomiting. Call for medical assistance immediately.
- 5.3.2 ZARNAS COMPANIES employees may be exposed to benzene at petroleum refining sites, near tank gauging operations or during field maintenance. Treat all tanks which have contained gasoline as a potential benzene hazard.
- 5.3.3 Overexposure to high concentrations of benzene, well above the levels where its odor is first recognizable, they may feel breathless, irritable, euphoric or giddy. Employees may experience irritation in eyes, nose and respiratory tract. They may develop a headache, feel dizzy, nauseated or intoxicated. Severe exposures may lead to convulsions and loss of consciousness.
- 5.3.4 Long term (chronic) exposure: Repeated or prolonged exposure, even at low concentrations, may result in various blood disorders, ranging from anemia to leukemia, an irreversible, fatal disease. Many blood disorders associated with benzene exposure may occur without symptoms.

5.4 SAFE WORK PRACTICES

- 5.4.1 The maximum time weighted average exposure limit is one part of benzene vapor per million parts of air (1 ppm) for an 8 hour workday and the maximum short term exposure limit (STEL) is 5 ppm as averaged over a 15 minute sampling period.

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- 5.4.2 ZARNAS COMPANIES will establish a regulated area wherever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the PEL, either the 8 hour TWA exposure of 1 ppm or the STEL of 5 ppm for 15 minutes.
- 5.4.3 ZARNAS COMPANIES will evaluate worksites to determine if any area meets the criteria as a regulated area. Signs will be posted at entrances to regulated areas.

DANGER – BENZENE -CANCER HAZARD
FLAMMABLE - NO SMOKING
AUTHORIZED PERSONNEL ONLY
RESPIRATOR REQUIRED

- 5.4.4 Employees must wash their hands, face and head before eating, drinking or smoking.
- 5.4.5 Smoking is prohibited in areas where benzene is used or stored.
- 5.4.6 Gasoline powered or internal combustion engines should be parked away from the tank area, until such time as combustible vapor test results, taken at the fire wall surrounding the tank(s), reveal no presence of flammable or combustible vapors or gases.
- 5.4.7 If diesel powered vacuum trucks are to be used for the removal of product from the tank, bond and ground all discharge hoses.
- 5.4.8 The metallic parts of ventilating equipment and duct work and all suction and discharge hoses will be double bonded to the tank and grounded to avoid sparks.
- 5.4.9 Avoid striking metal tools against other metal affixed to or placed around the tank. The use of non-sparking tools should be used when practical.
- 5.4.10 Benzene must be stored in tightly closed containers in a cool, well-ventilated area. Benzene vapor may form explosive mixtures in air. All sources of ignition must be controlled. Use non-sparking tools when opening or closing benzene containers. Fire extinguishers must be readily available.
- 5.4.11 Entry into a tank is not allowed if the oxygen content is below 19.5% or higher than 23.5%. Entry into a tank is prohibited without a valid *Confined Space Entry Permit* and hole watch.
- 5.4.12 A tank is considered *Benzene Hazard Free* only after being cleaned and tested and tests reveal the atmosphere in the tank to contain concentrations of benzene to be equal or less than 0.1 ppm.
- 5.4.13 Safe work practices are instituted when job task consist of or involve product line removal, blinding, blanking, draining, cleaning, steaming, purging, high pressure washing or neutralizing. Safe work procedures such as lockout/tagout, hot work or confined space entry are implemented to further control exposure potentials.

5.5 PERSONAL PROTECTIVE EQUIPMENT

- 5.5.1 All personal protective equipment is supplied to the employee at no cost and conforms to standards as outlined in 29 CFR 1926 Subpart E.

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- 5.5.2 PPE will be selected on the basis of its ability to prevent absorption, inhalation and ingestion. PPE will be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene.
- 5.5.3 PPE will reflect the needs of the employee based on work conditions, amount and duration of exposure and other known environmental factors but will contain as a minimum - boots, proper eye protection, gloves, sleeves, aprons and others as determined.
- 5.5.4 ZARNAS COMPANIES will strive to control employee exposure to benzene, on a project-to-project basis, by engineering and/or administrative controls before PPE. Respiratory protection will be required as a principal means of protecting employees under certain circumstances. Respirators will be used when engineering and administrative controls are being developed, when engineering and administrative controls have been unable to adequately limit exposure levels and in emergency situations.
- 5.5.5 Respiratory protection will be selected according to the airborne concentrations of benzene or conditions of use. A respiratory protection program will be established in accordance with 29 CFR 1926.103. Respiratory protection is required:
 - 5.5.5.1 During the time period necessary to implement engineering controls or work practices.
 - 5.5.5.2 When engineering and work practices are not feasible.
 - 5.5.5.3 In emergencies.
- 5.5.6 Approved respirators will be selected according to airborne concentrations of benzene.

0 to 0.67 ppm	-	no respirator required
0.67 to 6.7 ppm	-	half mask respirator with OV cartridges
6.7 to 33 ppm	-	full face respirator with OV cartridges
Greater than 33 ppm	-	SCBA
- 5.5.7 No employee will enter a space containing more than 33 ppm.

5.6 EMERGENCY PLAN

- 5.6.1 In the event of a medical emergency, institute first aid procedures and send for assistance in accordance with local procedures. Dial 9-1-1.
- 5.6.2 Employees not wearing protective equipment and clothing will be restricted from areas of spills or leaks until cleanup has been completed.
- 5.6.3 Only authorized and trained emergency response personnel should attempt containment. Unauthorized workers must evacuate the area. If benzene is spilled or leaked the following steps as a minimum should be taken.
 - 5.6.3.1 Remove all ignition sources.
 - 5.6.3.2 Ventilate the area of the spill or leak to disperse vapors.

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- 5.6.3.3 If possible, stop flow of liquid, allow to vaporize.
- 5.6.3.4 Use containment equipment such as dikes, compatible absorbent materials, etc.
- 5.6.3.5 Use non-sparking tools and explosion proof equipment at all times in the spill area.
- 5.6.3.6 ZARNAS COMPANIES should be aware of customer contingency plan provisions. Employees must be informed where benzene is used at client facility and aware of additional plant safety rules.

5.6.4 Move any affected workers from the hazardous area. If the exposed person has been overcome, initiate local emergency notification procedures. Never enter any vessel or confined space where the benzene concentration might be high enough to displace air or create an explosive atmosphere without proper training, equipment and procedures. Understand the facility's emergency rescue procedures and know the locations of rescue equipment before the need arises.

5.7 FIRST AID

- 5.7.1 For eye exposure, immediately flush with water for at least 15 minutes. Lifting the lower and upper lids occasionally, get medical attention as soon as possible.
- 5.7.2 For skin exposure immediately flush with copious amounts of water. Remove any clothing contaminated, and flush exposed skin areas, get medical attention as soon as possible.
- 5.7.3 If benzene has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.
- 5.7.4 For respiratory exposure get the victim to open, fresh air immediately. If breathing has stopped perform CPR. Keep the victim warm and at rest. Get medical attention as soon as possible.

5.8 MONITORING AND MEDICAL SURVEILLANCE

- 5.8.1 ZARNAS COMPANIES will monitor the worksite and operations to accurately determine the airborne concentrations of benzene to which employees may be exposed.
- 5.8.2 Initial monitoring will be completed within 30 days of the introduction of benzene at the worksite.
- 5.8.3 If the monitoring reveals employee exposure at or above the action level but at or below the TWA, the monitoring will be repeated at least every year. If the monitoring reveals employee exposure above the TWA, the monitoring will be repeated for each such employee at least every six months.
- 5.8.4 The monitoring schedule may be reduced from every six months to annually for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to the TWA or below but is at or above the action level.
- 5.8.5 If initial monitoring reveals employee exposure to be below the action level, the monitoring may be discontinued for that employee, except as otherwise required.

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- 5.8.6 Baseline and annual medical exams will be provided to employees that may work or are anticipated to participate in operations more than 10 times per year or may work in areas where benzene exposures may exceed the PEL over 30 days per year.
- 5.8.7 ZARNAS COMPANIES will provide a medical surveillance program available for employees who are or may be exposed to benzene at or above the action level 30 or more days per year, who are or may be exposed to benzene at or above the PEL 10 or more days per year or who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by ZARNAS COMPANIES
- 5.8.8 Notification of monitoring results will be provided to employees in writing within 15 working days of receipt of results.

5.9 RECORDKEEPING

- 5.9.1 Medical surveillance records will be maintained for the duration of employment plus 30 years after termination of employment.
- 5.9.2 Exposure monitoring records will be maintained for 30 years after completion of the project.
- 5.9.3 Exposure and medical records, medical surveillance findings and training records, along with ZARNAS COMPANIES's benzene and respiratory policies will be made available to affected employees or their representatives and to OSHA upon request.
- 5.9.4 This plan will be implemented and kept current by the safety director as required to reflect the most recent exposure monitoring data. ZARNAS COMPANIES will periodically review and revise its benzene program to reflect the most recent exposure monitoring data available, but in no case will the time period exceed 12 months between reviews.

5.10 TRAINING

- 5.10.1 Prior to the job assignment, ZARNAS COMPANIES will provide training to ensure that employees understand the required knowledge, skills and PPE necessary when working around benzene hazards. The training will include:
 - 5.10.1.1 Recognition of applicable hazards involved with the particular job and jobsite, as well as the methods and means necessary for safe work.
 - 5.10.1.2 The specific nature of the operation which could result in exposure to benzene.
 - 5.10.1.3 The purpose, proper selection, fitting, use and limitation of PPE.
 - 5.10.1.4 The adverse health effects associated with benzene exposure.
 - 5.10.1.5 Engineering controls and work practices associated with the job assignment, including relevant good work practices.
 - 5.10.1.6 The medical surveillance program.
 - 5.10.1.7 Monitoring procedures in place used to determine benzene exposure.

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- 5.10.2 Employees will be trained on the client emergency procedures. They must be informed where benzene may be present and of any additional facility safety rules during a site specific orientation.
- 5.10.3 Retraining will be provided for all affected employees as a minimum whenever there is a change in job assignments, a change in PPE, a change in equipment that presents a new hazard, a change in processes that presents a new hazard, the work takes employee into hazardous or regulated area, if there is a change in benzene safety procedures or if a safety procedure fails resulting in a near miss, illness or injury.
- 5.10.4 Additional retraining will also be conducted whenever a periodic inspection reveals or whenever ZARNAS COMPANIES has reason to believe, that there are deviations from or inadequacies in the employee's knowledge of known hazards or use of equipment or procedures. The retraining will reestablish employee proficiency and introduce new equipment or revised control methods and procedures, as necessary.
- 5.10.5 ZARNAS COMPANIES will certify employee training has been accomplished and kept up to date. Certification will contain overview of training conducted, employee name and date of training.

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7.1 PURPOSE

- 7.1.1 The purpose of this policy is to establish procedures for work in confined spaces, to eliminate and reduce the hazards associated with this type of work by addressing specific work practices and delegating individual responsibility for consistency in safe job performance.

7.2 RESPONSIBILITIES

7.2.1 Entrant

- 7.2.1.1 Know and understand the hazards to which they will be faced
- 7.2.1.2 Recognize the signs and symptoms of exposure to a hazard
- 7.2.1.3 Understand the acute and chronic effects associated with the exposure to hazards
- 7.2.1.4 Maintain communication with the attendants outside the space, following warnings given by the attendants and exiting the space immediately when told to do so
- 7.2.1.5 Know and understand the selection, use and limitations of PPE for safe entry
- 7.2.1.6 Be familiar with emergency procedures - know when and how to exit when instructed to do so by the attendant
- 7.2.1.7 Alert the attendant whenever entrant recognizes any sign or symptom of exposure
- 7.2.1.8 Be thoroughly familiar with all conditions of the entry permit and strictly follow them
- 7.2.1.9 Stop the job, exit with other entrants and immediately inform the entry supervisor if work is not being performed safely or that a potential hazard exist.

7.2.2 Attendant

- 7.2.2.1 Remain at the specific point of entry at all times while work is being performed inside the space until relieved by another attendant
- 7.2.2.2 Ensure accountability of all entrants by maintaining a *Confined Space Entrant Log*
- 7.2.2.3 Recognize potential hazards in the confined space, monitor activities inside and outside the permit space to determine if it is safe for entrants to remain inside
- 7.2.2.4 Maintain effective and continuous contact with entrants during entry
- 7.2.2.5 Have an understanding of atmospheric monitoring equipment and log readings in the confined space on the monitoring log at the prescribed intervals
- 7.2.2.6 Observe conditions outside the space which could endanger the entrants

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- 7.2.2.7 Order the evacuation of authorized entrants immediately if unacceptable conditions in the confined space are observed
 - 7.2.2.8 Observe behavioral actions and general demeanor of entrant(s) which indicate possible exposure to the hazards in the confined space
 - 7.2.2.9 Order entrants to evacuate the space immediately under any of the following:
 - 7.2.2.9.1 Prohibited condition
 - 7.2.2.9.2 Behavioral effects of hazard exposure
 - 7.2.2.9.3 Situation outside the space that could endanger the entrant(s)
 - 7.2.2.9.4 Cannot effectively and safely perform the duties required
 - 7.2.2.10 Summon rescue and/or emergency services immediately if necessary
 - 7.2.2.11 Not allow unauthorized persons to enter a permit space or regulated area
 - 7.2.2.12 Advise unauthorized workers to exit the area and notify the entry supervisor
 - 7.2.2.13 Never enter a confined space to perform a rescue
 - 7.2.2.14 Wear the florescent orange vest that identifies them as the attendant while at post
 - 7.2.2.15 Assist rescue and emergency personnel as needed
 - 7.2.2.16 Monitor only one confined space at a time
 - 7.2.2.17 Stop the job, order evacuation and immediately inform the entry supervisor if work is not being performed safely or that a potential hazard exist.
- 7.2.3 Entry supervisor
- 7.2.3.1 Act as the qualified person responsible for work activities being performed in and near a confined space
 - 7.2.3.2 Verify that the appropriate information has been entered on the permit, that all tests specified by the permit have been conducted by qualified persons
 - 7.2.3.3 Verify that all procedures, specified PPE and written emergency plan are in place and available at the site before endorsing the permit and allowing entry to begin
 - 7.2.3.4 Responsible for the initiation of the confined space entry permit
 - 7.2.3.5 Ensure that conditions are acceptable for entry
 - 7.2.3.6 Authorize entry and oversee entry operations

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- 7.2.3.7 In conjunction with management, contractors and other qualified personnel, determine appropriate PPE to be worn by entrants
- 7.2.3.8 Serve as an attendant if needed
- 7.2.3.9 Terminate entry procedures as required - Terminate a permit whenever there are dangers for the entrants
- 7.2.3.10 Confirm that measures are in place to keep unauthorized personnel clear of the area
- 7.2.3.11 Check the work at least twice a shift to verify and document permit requirements are being observed (more frequent checks should be made if operations or conditions are anticipated that could affect permit requirements)
- 7.2.3.12 Ensure necessary information on chemical hazards (ex. pertinent SDS and specific analytical information) is kept at the jobsite for the employees or rescue team
- 7.2.3.13 Ensure that the attendant and entrants are aware of all hazards, existent and potential, in the confined space or hazardous area and that all mitigation measures are completed prior to entry to manage the hazards
- 7.2.3.14 Secure a rescue team onsite or an available prearranged outside rescue service to respond in a timely manner and ensure at least one member is first aid/CPR certified
- 7.2.3.15 Coordinate operations and procedures for multi-employers jobsites
- 7.2.3.16 Stop the job and immediately inform attendant to order evacuation if work is not being performed safely or that a potential hazard exist
- 7.2.3.17 Assure the proper closing of a confined space and cancel the permit once the work inside of the confined space has concluded
- 7.2.4 Safety director
 - 7.2.4.1 Issue and administer the program and making sure that it satisfies the requirements of all applicable federal, state and local confined space entry requirements
 - 7.2.4.2 Evaluate and update the program
 - 7.2.4.3 Train and retrain employees to their level of involvement
 - 7.2.4.4 Verify the purpose for each entry into confined space
 - 7.2.4.5 Inform contractors of the company's confined space entry program requirements and of the potential hazards of each space to be entered
 - 7.2.4.6 Verify that entry equipment is maintained and calibrated according to manufacturer's specifications and the company's preventive maintenance procedures

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7.2.4.7 Have rescue services provided by host facility or an outside service which is given an opportunity to examine the entry site, practice rescue and decline as appropriate or provided by the employer by selecting a rescue team that is equipped and trained to perform the needed rescue services.

7.2.5 Unauthorized employees

7.2.5.1 Maintain safe distances from confined spaces unless authorized to enter

7.3 HAZARD IDENTIFICATION

7.3.1 ZARNAS COMPANIES will review information provided by the operator regarding the product or content of the confined space. Content may include anything which could aid in the identification of all possible hazards in the space and assist in preparing effective job procedures.

7.3.2 Entry supervisor will perform a physical assessment and evaluation of site prior to starting work.

7.3.3 Project management and entry supervisor will assess type and degree of PPE required for successful completion of task. Inclusive in this assessment is the probability or the creation of additional hazards resulting from work activities within the confined space.

7.3.4 Entry supervisor will evaluate the effectiveness of any equipment to be used and any additional hazards which would be created by the use of such equipment.

7.3.5 Any equipment with the potential to produce an ignition source will be bonded and grounded to eliminate all known related hazards and a hot work permit may be necessary.

7.3.6 All first time entry into confined spaces or hazardous areas, where atmospheric monitoring has not been completed will be made wearing either a SCBA or positive pressure air-supplied respirator with a waist mounted 5 minute escape bottle.

7.3.7 All workers involved in the work being performed will participate in a pre-job safety meeting and complete a job safety analysis to identify all possible hazards prior to starting work. Entry supervisor will conduct pre-entry meeting with all affected personnel to discuss nature of hazards involved, necessary precautions to be taken, proper use of protective and emergency equipment and to address any project related questions or concerns from work crews.

7.4 HAZARD CONTROL

7.4.1 Control the hazards in a space to eliminate the need for a permit (after all other hazards within the space have been eliminated). No company personnel will enter the space unless:

7.4.1.1 Conditions making it unsafe to remove an entrance cover are eliminated before the cover is removed.

7.4.1.2 Opening at entrance cover are guarded by a railing, temporary cover or other temporary barrier that will prevent accidental falls and will protect entrants working in the space from foreign objects entering the space.

7.4.1.3 The internal atmosphere has been tested.

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- 7.4.2 Onsite personnel will test the atmosphere inside the confined space or hazardous area prior to entry for the following and in the following sequence:
 - 7.4.2.1 Oxygen content
 - 7.4.2.2 LEL % of combustible gases
 - 7.4.2.3 Toxic vapor concentrations as related to their individual permissible exposure levels
- 7.4.3 Perform atmospheric testing in the confined space on a minimum frequency of each 30 minutes during entry and document and record the readings on the confined space entry monitoring log.
- 7.4.4 Perform atmospheric testing to confirm acceptable conditions, as per the entry permit, if the confined space has been unoccupied for a period in excess of 30 minutes.
- 7.4.5 Utilize mechanical ventilation to remove toxic and combustible vapors and gases for dissipation into the atmosphere if necessary. Ensure that vapors are not released to any point where they may travel to ignition sources or accumulate inside the firewall.
- 7.4.6 Continuous ventilation will begin at a minimum of 30 minutes before entry and will be maintained thorough the duration of entry into a confined space.
- 7.4.7 Use of respiratory protection will be mandatory when the confined space contains a toxic substance. The specific type of respiratory protection will be determined by the type and concentration of the contaminant found in the space.
- 7.4.8 Blind, block valve or otherwise restrict and isolate the flow of product through feed lines to the confined space before employees are allowed to enter.
- 7.4.9 Maintain an entry attendant at the point of entry to monitor all entrants inside the space for the full duration of the entry.
- 7.4.10 Workers will ensure proper lockout/tagout of all switches, covers, control panels and any other possible release of stored energy etc. affecting the confined space to be entered.
- 7.4.11 Complete the entry permit to ensure hazards have been controlled.

7.5 PERSONAL PROTECTIVE EQUIPMENT

- 7.5.1 ZARNAS COMPANIES may require entrants to use the following PPE and other safety equipment as needed:
 - 7.5.1.1 Hard hat with face shield
 - 7.5.1.2 Chemical splash goggles
 - 7.5.1.3 Steel toe, rubber boots
 - 7.5.1.4 Personal multi-gas monitor

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- 7.5.1.5 Hearing protection
- 7.5.1.6 PVC rain suit and rubber gloves
- 7.5.1.7 Fall arrest equipment
- 7.5.1.8 Low voltage or pneumatic lighting
- 7.5.1.9 Non-spark tools, shovels, etc.
- 7.5.1.10 NIOSH approved respiratory protection equipment
- 7.5.2 Air-purifying respirators
 - 7.5.2.1 Oxygen level 19.5% - 23.5%
 - 7.5.2.2 LEL < 10 %
 - 7.5.2.3 H₂S < 10 ppm
 - 7.5.2.4 Benzene < 1 ppm
- 7.5.3 Supplied-air respirators
 - 7.5.3.1 Oxygen level < 19.5%
 - 7.5.3.2 H₂S > 10 ppm - < 100 ppm
 - 7.5.3.3 Benzene > 1 ppm - < 5 ppm
 - 7.5.3.4 First time entry into space to check atmosphere
 - 7.5.3.5 Entry into space with unknown atmosphere
 - 7.5.3.6 For confined space entries that require the use of supplied air for the entrants, there will be a dedicated person, known as bottle watch/ standby that is responsible for the operation of the supplied air trailer and will serve as rescue standby to assist in the event of a confined space rescue. The standby is only to assist and is not to enter.
- 7.5.4 SCBA with 5 minute escape bottle
 - 7.5.4.1 First time entry into tank to check assess atmosphere
 - 7.5.4.2 Entry into space with unknown atmosphere
 - 7.5.4.3 Same parameters as air-supplied respirator
- 7.5.5 Air supply must be certified grade D quality breathing air. The bottles will be tested and tagged.

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7.6 MONITORING AND TESTING

- 7.6.1 The entry supervisor will initially review and evaluate the atmospheric testing results gathered by the operator. This data will at a minimum define oxygen content, % LEL and define the percentage of any toxics contained in the confined space in question.
- 7.6.2 Testing for hazards before entry into confined space:
 - 7.6.2.1 All confined spaces will be tested before and during entry using properly calibrated and approved equipment.
 - 7.6.2.2 The air in the confined space will be tested for oxygen levels, flammable gases and vapors and toxic substances.
 - 7.6.2.3 If there is the possibility that conditions could change during the entry, continuous air monitoring will take place.
 - 7.6.2.4 If the hazard level cannot be determined by testing, an immediately dangerous to life or health (IDLH) situation will be assumed and appropriate protective measures will be used during the entry.
- 7.6.3 In the absence of atmospheric hazard data, the entry supervisor is responsible for the gathering of such data. This process will include but not be limited to the following:
 - 7.6.3.1 Use handheld meters to test for the oxygen level present in the confined space.
 - 7.6.3.2 Use handheld meters to test for the explosive level (% LEL) of any flammable or volatile materials in the confined space.
 - 7.6.3.3 Utilize an approved handheld pump to test for the presence and quantity of toxic contaminants in the confined space.
 - 7.6.3.4 Use a lead-in-air test kit to detect lead content in gasoline and other metallic lined tanks or vessels when warranted.
 - 7.6.3.5 If NORM is suspected in the confined space, test for the presence of gamma radiation on equipment and for contamination on entrants upon exiting the space.
- 7.6.4 Results of testing will be recorded on the *Confined Space Permit* in the space provided adjacent to the stipulated acceptable entry condition.
- 7.6.5 All employees may request the space be re-evaluated.

7.7 ACCEPTABLE ENTRY CONDITIONS

- 7.7.1 Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin unless isolation of the space is infeasible because the space is large or is part of a continuous system (such as pipelines). Pre-entry testing will be performed to the extent feasible before entry is authorized and if entry is authorized, entry conditions will be continuously monitored in the areas where authorized entrants are working.

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- 7.7.2 Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations. Results of testing will be recorded on the *Confined Space Entry Permit*.
- 7.7.3 Monitoring two confined spaces is not permitted.
- 7.7.4 Entry into confined spaces will be made only in accordance to the following table:

Parameter	Entry allowed with permit	Entry allowed with permit and rescue equipment ready	NO ENTRY ALLOWED
Type of Gas	Airborne Concentration	Airborne Concentration	Airborne Concentration
Oxygen	19.5% - 23.5%	19.5% - 23.5%	< 19.5% > 23.5%
Hydrocarbons	< 1% of LEL	1% - 10% of LEL	≥ 10% of LEL
Hydrogen Sulfide	< 10 ppm	10 ppm - 100 ppm	≥ 100 ppm
Sulfur Dioxide	< 2 ppm	2 ppm - 100 ppm	≥ 100 ppm
Carbon Dioxide	< 10,000 ppm	10,000 ppm - 50,000 ppm	≥ 50,000 ppm
Carbon Monoxide	< 35 ppm	35 ppm - 350 ppm	≥ 350 ppm

7.8 PRE-ENTRY PROCEDURE

- 7.8.1 All spaces will be considered permit required confined space until the pre-entry procedure demonstrates otherwise.
- 7.8.2 Unless they already know, inform the operator of the intent to enter the confined space. At this time a request is made for a confined space entry permit from the operator and/or as necessary, the confined space entry supervisor initiates a confined space entry permit.
- 7.8.3 Documents will be completed before entry is authorized that include specifying acceptable entry conditions and isolating the permit space by purging, inerting, flushing or ventilating the permit space as necessary to eliminate or control atmospheric hazards and verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.
- 7.8.4 Investigate and evaluate all potential atmospheric hazards, which may be encountered in the confined space based on the history of use and any other information provided by the operator.
- 7.8.5 Survey the outside perimeter of the space for the presence of flammables and/or toxics.
- 7.8.6 If perimeter of space is free of atmospheric hazards, set up ventilation equipment, making sure to bond and ground all sources of ignition.
- 7.8.7 If dangerous air contamination or oxygen deficiency does not exist within the space, as demonstrated by tests performed in accordance with the pre-entry procedures, entry into and work within the space may proceed subject to the following provisions:

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- 7.8.7.1 Air testing, in accordance with the pre-entry procedures, will be conducted with sufficient frequency to ensure that the development of dangerous air contamination or oxygen deficiency does not occur during the performance of any operation.
- 7.8.7.2 Work stops, employees exit and additional precautions are taken if dangerous air contamination and/or oxygen deficiency does develop.
- 7.8.8 Depending on the initial monitoring, it can be determined what PPE will be needed to enter the confined space. This information will also be committed to the *Confined Space Entry Permit*.
- 7.8.9 Where the existence of dangerous air contamination or oxygen deficiency is demonstrated by tests performed in accordance with pre-entry procedures or if development of dangerous air contamination or an oxygen deficiency is imminent, the following requirements will also apply:
 - 7.8.9.1 Existing ventilation will be augmented by appropriate means.
 - 7.8.9.2 When additional ventilation has removed dangerous air contamination or oxygen deficiency as demonstrated by additional testing conducted (and recorded), entry into and work within the space may proceed.
 - 7.8.9.3 No source of ignition will be introduced until implementation of appropriate provisions of this section have ensured that dangerous air contamination due to flammable and/or explosive substances does not exist.
 - 7.8.9.4 Whenever oxygen consuming equipment such as welding torches or furnaces are used, take measures to ensure adequate combustion air and exhaust gas venting.
 - 7.8.9.5 To the extent feasible, make provisions to permit ready entry and exit.
 - 7.8.9.6 It is not feasible to provide for ready exit from spaces equipped with automatic fire suppression systems employing harmful design concentrations of toxic or oxygen-displacing gases or total foam flooding, such systems will be deactivated. Where it is not practical or safe to deactivate such systems, the use of respiratory protective equipment, such as SCBA, will apply during entry into and work within such spaces.
- 7.8.10 It is the policy of ZARNAS COMPANIES to only work in a confined space if it can be made safe by the means listed above. We will not work in confined spaces where there is an ongoing hazard of air contamination or oxygen deficiency. These operations require extra measures and precautions beyond our immediate ability to perform. If such work does become necessary, a separate program will be developed.
- 7.8.11 The *Confined Space Entry Permit* should be completed at this time. Confined space entry should be indicated on the JSA for the shift. Associated forms such as the *Confined Space Entrant Log* should be prepared for use as well.
- 7.8.12 All lockout/tagout procedures will be followed in securing electrical, mechanical and pressure systems and/or rotating machinery.

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- 7.8.13 If welding or cutting is to be performed in a confined space, local exhaust ventilation will be provided. A *Hot Work Permit* will be completed and attached to the *Confined Space Entry Permit*.
- 7.8.14 SDSs for hazardous chemicals being used will be included in the *Confined Space Entry Permit*.
- 7.8.15 The entry supervisor will conduct a pre-entry meeting. This should include but not be limited to:
 - 7.8.15.1 Initiate the entry crew assignments: qualified attendant, qualified bottle watch (if using air supplied respiratory protection) and qualified entrants.
 - 7.8.15.2 Discuss hazards and controls, such as PPE and respiratory protection and make certain that entrants understand purpose and conditions of the entry.
 - 7.8.15.3 Communication signals
 - 7.8.15.4 Evacuation and rescue procedures
 - 7.8.15.5 Monitoring for oxygen, LEL and toxic levels
 - 7.8.15.6 After all entry requirements have been met and a determination of what PPE is required and has been supplied to the entrants, then and only then are entrants allowed access to the space
- 7.8.16 When employees of more than one employer are working in or near the same confined space, entry operations will be coordinated through the project manager so employees of one employer do not endanger the employees of another employer.
- 7.8.17 The entry supervisor must ensure adherence to the *Confined Space Entry Permit*.

7.9 ENTRY PERMIT

- 7.9.1 A site specific *Confined Space Entry Permit* completed by the entry supervisor will verify completion of the items required for safe entry. This permit will be kept at the jobsite for the duration of the job. If circumstances dictate an interruption in the work, the permit required confined space must be re-evaluated and a new permit must be completed.
- 7.9.2 The duration of the *Confined Space Entry Permit* may not exceed the time required to complete the assigned job identified on the permit.
- 7.9.3 The entry supervisor will initiate and complete a confined space entry permit. A copy of the entry permit generated by the operator or the original of the permit will be attached to the JSA.
- 7.9.4 A completed *Confined Space Entrant Log* must accompany all confined space entry permits.
- 7.9.5 Each confined space will have a separate permit initiated and will be manned by a separate and dedicated attendant. No attendant is to monitor multiple confined spaces.
- 7.9.6 Monitoring of the space must inform entrants of the potential hazards and results. The *Confined Space Entry Permit* will be reviewed with all onsite personnel prior to entry. They must participate in the permit review and signing. The entry supervisor will sign the permit to authorize entry.

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- 7.9.7 The completed *Confined Space Entry Permit* will be made available at the time of entry to all authorized entrants by posting it at the entry portal or by any other equally effective means so that the entrants can confirm that pre-entry preparations have been completed.
- 7.9.8 Permits are kept for one year. A new permit must be issued before re-entry. The entry supervisor will be held accountable for the proper filing and execution of all prescribed permits and documentation associated with all confined space entries performed.

7.10 TERMINATING/CANCELING A PERMIT

- 7.10.1 The *Confined Space Entry Permit* is good for the duration of the time to perform the work specified or until the time limit on the permit expires.
- 7.10.2 Continuation of work beyond the time specified requires the issuance of a new permit.
- 7.10.3 The entry supervisor will terminate entry and cancel the entry permit when:
 - 7.10.3.1 The entry operations covered by the entry permit have been completed
 - 7.10.3.2 A condition that is not allowed under the entry permit arises in or near the confined space or when permit conditions change (ex. hazardous air monitoring results are noted, unsafe behaviors are observed, etc.).
 - 7.10.3.3 The space will be closed and the permit canceled. The entry supervisor will enter the date, time and signature at the bottom of the *Confined Space Entry Permit*.
- 7.10.4 A *Confined Space Entry Permit* is only terminated with a signature from the entry supervisor.
- 7.10.5 Upon termination of the *Confined Space Entry Permit*, the entry supervisor will confirm that:
 - 7.10.5.1 Personnel are out of the confined space and accounted for
 - 7.10.5.2 Equipment has been removed from the space
 - 7.10.5.3 Entry portals, inlet and outlet piping are restored to operating conditions
 - 7.10.5.4 Safety and automation systems are restored to normal service
 - 7.10.5.5 The *Confined Space Entry Permit* is removed from the work area
 - 7.10.5.6 Affected personnel are debriefed to identify deficiencies or hazards encountered during the entry. The debriefing will be documented on the canceled permit.
- 7.10.6 Canceled entry permits are retained for one year to facilitate the review of the confined space program. If no entry is performed during a 12 month period, a review is not necessary.
- 7.10.7 Any problems encountered during an entry operation will be noted so appropriate revisions to the permit space program can be made, such as:
 - 7.10.7.1 Any space is compromised by the entry of an unauthorized personnel

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- 7.10.7.2 A hazard not covered by the permit is determined or found to exist
- 7.10.7.3 Any injury or illness arises from the entry into a confined space
- 7.10.7.4 If employee feels the program does not provide adequate procedures or protection

7.11 COMMUNICATION

- 7.11.1 Entrants must maintain a communications system with personnel inside the confined space and those monitoring the work from the outside.
- 7.11.2 Attendants and entrants will use tugging signals, audible alarms, radio (set to specific emergency channel) and hand signals as methods to communicate.
- 7.11.3 If the primary communication link fails, the persons working inside the space must be evacuated.

7.12 RESCUE AND EVACUATION PROCEDURE

- 7.12.1 The emergency plan developed during the planning phase must be available onsite and verified. It is important that entrants, attendants, entry supervisor and rescue team involved understand their roles and know what to do in the event of an emergency.
- 7.12.2 Pre-arrange emergency response and rescue from the onsite team or outside sources (contract or local fire dept.) Offsite emergency services and rescue can be summoned by calling 9-1-1 or pre-arranged methods of communicating with emergency response team onsite.
- 7.12.3 Establish primary evacuation route and *grouping area* and a secondary evacuation route and *grouping area* where employees assemble in the event of an emergency.
- 7.12.4 Entrants will immediately vacate the confined space and immediately proceed to the designated *grouping area* upon being notified by the attendant of an emergency that warrants evacuation.
- 7.12.5 Ensure that the response team is provided with and trained to use PPE and necessary rescue equipment. Each member must be trained to perform the assigned rescue duties including first aid and CPR. Response team must also receive entrant training.
- 7.12.6 Each member of the response team will practice making permit space rescues at least once every 12 months, by means of simulated rescue operations. Representative permit spaces will simulate the types of spaces from which any anticipated rescue is to be performed.
- 7.12.7 When non-company rescue personnel are designated to perform permit space rescue, ZARNAS COMPANIES will inform rescue service of the hazards that may be encountered and provide the rescue service with access to all permit spaces from which rescue may be necessary so that response team can develop appropriate rescue plans.
- 7.12.8 Issues to consider when determining which rescue approach to take (either onsite or offsite):
 - 7.12.8.1 Determine how quickly a rescue team must be able to respond and the time it takes for the rescue team or service to receive notification, arrive at the scene, set up equipment and be ready for entry

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- 7.12.8.2 Availability of the rescue team and adequate communication
- 7.12.8.3 Willingness to rescue on company premises
- 7.12.8.4 Necessary skills and rescue equipment
- 7.12.9 ZARNAS COMPANIES personnel do not perform entry required rescue. Entry required rescue is to be executed by trained and certified individuals of the rescue team provided onsite by the operator or by those individuals whom have been contracted for rescue services prior to confined space entry.
- 7.12.10 For non-entry rescue, a lifeline attached to entrant is attached to a retrieval device or will be pulled by hand to extricate the injured party from the space.
- 7.12.11 ZARNAS COMPANIES will provide protection of entrants from external hazards including pedestrians and vehicles and ensure no unauthorized entry by:
 - 7.12.11.1 The area around the space must be barricaded to limit personnel in the area. The perimeter of this regulated area will be a minimum of 4 feet from the opening.
 - 7.12.11.2 Placing DANGER TAPE across all confined space openings or entrances with a sign attached stating: *Permit Required*.
 - 7.12.11.3 Posting warning signs: *Confined Space - Authorized Entrants Only* at the entry to the area which explains the hazards which may be encountered and the need to remain out of the work area unless authorized and qualified to enter.
- 7.12.12 Rescue service must be onsite for IDLH conditions while work is being performed.

7.13 TRAINING

- 7.13.1 Each affected employee must be trained prior to initial assignment, prior to a change in assigned duties, if a new hazard has been created or special deviations have occurred.
- 7.13.2 Entrants, attendants, entry supervisors and rescue personnel will be trained on their respective responsibilities listed in this policy.
- 7.13.3 Confined space training will include understanding the duties and requirements of safe entry, the hazards they may encounter and the necessary precautions to eliminate or control those hazards, permit requirements and rescue equipment.
- 7.13.4 ZARNAS COMPANIES will certify employees assigned to confined space work are properly trained and that training is documented and maintained in the employee's training file.
 - 7.13.4.1 Certification will include employee name, date of training, nature of training and instructor name and signature.
 - 7.13.4.2 Copies of the employee's certification will also be made available to the employee or their designated representative upon notification.



CONFINED SPACE EVALUATION

SPACE INFORMATION

Verbal Space Designation: _____

Numerical Space Designation: _____

Location: _____

Space Marked: Yes No Entry Controlled: Yes No

Signage: Yes No Barriers: Yes No Locks: Yes No

Current Use of Space: _____ Previous Use of Space: _____

RELATED OPERATING PROCEDURES REVIEWED

<input type="checkbox"/> Hazard Communication	<input type="checkbox"/> Respiratory Protection	<input type="checkbox"/> Electrical Safety	<input type="checkbox"/> Lockout/Tagout
<input type="checkbox"/> Job Safety Analysis	<input type="checkbox"/> Accident Investigation	<input type="checkbox"/> Process Safety	<input type="checkbox"/> Hot Work/ Fire Prevention

CONFINED SPACE ASSESSMENT CHECKLIST

1. Area was not designed for continual worker occupancy?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Area can be bodily entered and assigned work performed?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. Area has limited and/or restricted means of access and egress?	<input type="checkbox"/> Yes <input type="checkbox"/> No

IF ANSWER TO ALL OF THE ABOVE ARE YES, SPACE MEETS CRITERIA FOR CONFINED SPACE. PROCEED TO NEXT SECTION.

PERMIT REQUIRED CONFINED SPACE DETERMINATION

1. Area contains or has the potential to contain a hazardous atmosphere?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Area contains a material that has the potential to engulf an entrant (water, grain, sand, etc.)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. Area has an internal configuration, inwardly converging walls or a floor that slopes downward and tapers to a smaller cross section?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. Area contains any other recognized serious safety and health hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No

IF ANSWER TO ANY ONE OR MORE OF THE ABOVE IS YES, SPACE MEETS CRITERIA FOR CONFINED SPACE. Permit required spaces must be identified with the appropriate signs and implement measures to prevent unauthorized entry. If employee entry is required, a confined space entry program and training program must be developed and implemented.

CONFIGURATION OF SPACE

<input type="checkbox"/> Vessel	<input type="checkbox"/> Pit	<input type="checkbox"/> Vault	<input type="checkbox"/> Silo	<input type="checkbox"/> Hopper	<input type="checkbox"/> Bin
<input type="checkbox"/> Tank	<input type="checkbox"/> Railcar	<input type="checkbox"/> Tank Car	<input type="checkbox"/> Sewer	<input type="checkbox"/> Well	<input type="checkbox"/> Tunnel
<input type="checkbox"/> Digester	<input type="checkbox"/> Tanker	<input type="checkbox"/> Pipeline	<input type="checkbox"/> Ships Hold	<input type="checkbox"/> Other:	

DIMENSIONS OF SPACE

Depth/Height: _____ Width/Inner Diameter: _____ Length: _____

Volume/Capacity: _____ Shape: _____

Elevated Above Ground Below Ground

ANTICIPATED RESCUE

Vertical Extraction Horizontal Extraction Other:

AUTHORIZATION

I certify that I have conducted a confined space assessment of the above designated space. To the best of my knowledge, I believe the information contained herein to be true and accurate as of the time of the assessment.

PERMIT NON-PERMIT

Name: _____ Signature: _____

Title: _____ Date: _____ Time: _____ am pm



CONFINED SPACE ENTRY PERMIT

ZARNAS

Permit Number: _____ Site: _____

PERMIT VALIDITY PERIOD

Date _____ Time _____
From: ____/____/____ To: ____/____/____ From: ____ am pm To: ____ am pm

Confined space identification code (if identified): _____

Notes: _____

AUTHORIZED PERSONNEL

Workers Authorized Entry	Attendants	Attendants and Shift for Fire Watch (Hot Work)

CONTRACTOR NOTIFICATION

Contractor notified of: _____ Permit Conditions: Yes No
Potential Hazards Yes No

SITE PREPARATION

Work area isolated with signs and/or barriers?	<input type="checkbox"/> Yes <input type="checkbox"/> No
All energy sources locked/tagged out?	<input type="checkbox"/> Yes <input type="checkbox"/> No
All input lines capped/blinded?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If vessel – drained, flushed, neutralized, cleaned, purged?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Ventilation initiated 30 minutes before entry?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fire extinguishers on hand?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fall hazards considered and prepared for?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Engulfment hazards considered and prepared for?	<input type="checkbox"/> Yes <input type="checkbox"/> No

PRE-ENTRY ATMOSPHERIC TESTING

Tester Name: _____ Signature: _____

Title: _____ Date: ____/____/____ Time: ____ am pm

INITIAL TESTING DATA

Testing Requirement	Instrument Reading	Last Time Taken	Time Interval	Action Levels	
				Level	Unit
Oxygen content	% O ₂				
Flammable concentration	< 10% LEL				
H ₂ S	< 10 ppm				
Cl ₂	< 0.5% ppm				
CO	< 35 ppm				
SO ₂	< 2 ppm				
Other	ppm				

EMERGENCY/RESCUE PROCEDURES

Location of written plan: _____

Type of Emergency/Rescue Team required: _____

Onsite: Yes No Contact: _____ Phone: _____

Offsite: Yes No Contact: _____ Phone: _____

Additional Information: _____

PERSONAL PROTECTIVE EQUIPMENT REQUIRED

- hard hat safety glasses goggles face shield welding hood
- FR clothing safety toe boots hearing protection gloves type: _____
- fall protection disposable chemical suit gas monitor type: _____
- air purifying respirator type: _____ self-contained breathing apparatus type: _____

AREA SAFETY EQUIPMENT REQUIRED

SPACE REVIEW INFORMATION

Current Use of Space: _____

Previous Use of Space: _____

Previous Problems: _____

Previous Permit Reviewed: Yes No Date: ____/____/____ Time: ____ am pm

PERMIT AUTHORIZATION

I acknowledge that I have inspected the space for safety and reviewed all safety precautions recorded on this permit.

Name: _____ Signature: _____

Title: Entry Supervisor Date: ____/____/____ Time: ____ am pm

Name: _____ Signature: _____

Title: _____ Date: ____/____/____ Time: ____ am pm



CRANE SAFETY

8.1 PURPOSE

- 8.1.1 The purpose of this policy is to outline ZARNAS COMPANIES procedures for safe crane operations, lifting practices and training requirements regarding overhead cranes, hoists and rigging equipment.

8.2 RESPONSIBILITIES

8.2.1 Construction rigging supervisor

- 8.2.1.1 Conduct and document pre-briefings with members of the rigging crew, the operator and other affected parties prior to a lift.
- 8.2.1.2 Identify the specific tasks to be accomplished and members of the crew responsible.
- 8.2.1.3 Ensure the project manager is present at these briefings.

8.2.2 Safety director

- 8.2.2.1 Monitor site rigging and lifting operations for compliance with all cranes.

8.2.3 Controlling entity

- 8.2.3.1 Inform user and operator of equipment hazards beneath the equipment set-up area (such as voids, tanks, utilities) if those hazards are identified in documents (such as site drawings, as-built drawings and soil analyses) in the possession of the controlling entity (whether on or off site) and of any other hazards known to the controlling entity.
- 8.2.3.2 Overall responsibility for the project's planning, quality and completion.

- 8.2.4 If there is no controlling entity for the project, responsibility for providing adequate ground conditions rests on the employer that has authority at the site to make or arrange for ground preparations.

8.3 GENERAL

- 8.3.1 A contractor operating a crane on a construction site may not have the ability or authority to provide for adequate ground conditions at the site. The standard therefore places the responsibility for ensuring that the ground conditions are adequate on the *controlling entity* at the site, which is the prime contractor, general contractor, construction manager or other legal entity with overall responsibility for the project's planning, quality and completion.
- 8.3.2 All operators must be familiar with and be trained to operate the equipment they are assigned to operate. Documentation of the operators training must be available upon request.
- 8.3.3 All provisions of this program must be followed, crane inspections must be performed and equipment must remain in safe operating condition.

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- 8.3.4 Procedures applicable to the operation of equipment must be readily available in the cab at all times. Procedures include rated capacities, recommended operating speeds, special hazard warnings, instructions and operator manual.
- 8.3.5 Manufacturer instructions, procedures and prohibitions must be followed and complied with when assembling and disassembling equipment. The manufacturer must approve any modifications in writing. A qualified engineer will ensure the safety factor of the equipment is not compromised.
- 8.3.6 While the crane is in operation, the crane operator should not perform any other work or leave the position at the controls until load has been safely landed and the machine secured.
- 8.3.7 All cranes should be equipped with a warning system. Proceed with load movement when personnel are clear.
- 8.3.8 Safety devices including crane level indicator, boom stops, jib stops, foot pedal brake locks and horns are required to be on all equipment and must be in proper working order before operations begin. If any of the devices are not in proper working order the equipment must be taken out of service and operations must not resume until the device is working properly.

8.4 SAFE WORK PRACTICES

- 8.4.1 All workers involved with a lift will participate in all JSA, risk assessments and safety meetings concerning the lift operation.
 - 8.4.1.1 For repetitive lifts, the pre-job briefing will be held for the first lift and for any subsequent lift if substantial changes have been made to the means, methods and/or personnel in the crew.
- 8.4.2 The crane operator has the authority to stop work and refuse to handle loads whenever there is a safety concern until a qualified person has determined that safety has been assured.
- 8.4.3 Crane booms, cables and rigging equipment should be inspected at the start of each shift. Any part showing signs of damage should be taken out of service, replaced or repaired or replaced by a qualified technician.
- 8.4.4 Data plates should be attached to all cranes and should clearly indicate the safe load.
- 8.4.5 Where available, hoisting routes that minimize the exposure of employees to hoisted loads must be used, to the extent consistent with public safety.
- 8.4.6 The crane operator should not move a load over any personnel. While the operator is not moving a suspended load, no employee may be within the fall zone, except for employees:
 - 8.4.6.1 Engaged in hooking, unhooking, or guiding the load
 - 8.4.6.2 Engaged in the initial attachment of the load to a component or structure
 - 8.4.6.3 Operating a concrete hopper or concrete bucket
- 8.4.7 Workers are not allowed to ride on any part of a crane not designed to hold personnel.

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- 8.4.8 The materials being hoisted must be rigged to prevent unintentional displacement.
- 8.4.9 A competent and qualified person must direct the assembly and disassembly of equipment. The materials must be rigged by a qualified rigger.
- 8.4.10 All cranes should be equipped with a 20# ABC fire extinguisher and within reach of the operator.
- 8.4.11 Cranes will have handrails around the cab where walkways are used.
- 8.4.12 Crane booms should never be used as scaffolding.
- 8.4.13 Any unsafe condition noted during the crane inspection will be repaired before the crane is used.

8.5 WORK ZONE

- 8.5.1 A pre-operation hazard assessment will be performed to identify the work zone. The work zone will be identified by determining boundaries or defining the work zone as 360° around the equipment up to the maximum working radius.
- 8.5.2 If equipment has the potential to strike and injure an employee or pinch/crush an employee against any other object, the swing radius will be identified by some form of warning line.
- 8.5.3 Cranes must not be used unless ground conditions are able to support equipment and supporting materials per manufacturer specifications. ZARNAS COMPANIES will ensure that equipment must not be assembled or used unless ground conditions are firm, drained and graded to a sufficient extent so that, in conjunction with the use of supporting materials, the equipment manufacturer specifications for adequate support and degree of level of the equipment are met.
- 8.5.4 When working around power lines, lines are presumed to be energized and un-insulated unless confirmed to be de-energized by the utility owner and visibly grounded at the worksite.
- 8.5.5 The lines will be de-energized, grounded or other protective measures will be provided before work starts, to ensure accidental contact with power lines cannot be made. The hazard assessment must determine if any part of equipment can get closer than 20 feet to a power line.
- 8.5.6 Determine the voltage and minimum approach distance permitted in Table A. If using Table A to determine the minimum clearance distance, determine whether any part of the crane, load or load line could get closer than the Table A distance to a power line if the equipment is operated up to its maximum working radius in the work zone. If determined that part of the crane, load or load line could come closer to the power line than required minimum clearance distance (either 20 feet or the Table A clearance), t either de-energize and ground the line or take specified steps to maintain the required minimum clearance distance.
 - 8.5.6.1 One way to determine power line voltage is to ask the power line owner or operator. The utility must respond to such a voltage inquiry within two working days.

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Table A - Minimum Clearance Distances	
Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/ operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

Table T – Minimum Clearance Distances While Traveling With No Load	
Voltage (nominal, kV, alternating current)	While Traveling – Minimum clearance distance (feet)
up to 0.75	4
over .75 to 50	6
over 50 to 345	10
over 345 to 750	16
over 750 to 1,000	20
over 1,000	(as established by the utility owner/ operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

8.6 CRANE OPERATOR

- 8.6.1 Must hold valid crane operator certificate for the applicable crane and be familiar with the crane.
- 8.6.2 Responsible for safe operation of the crane which includes rejecting unfit lifting equipment or unsafe conditions. The crane operator has the authority to stop and refuse to handle loads until a qualified person determines it safe to resume the lift.
- 8.6.3 Keep condition of the crane in accordance with the planned maintenance program and certified according to class authority.
- 8.6.4 ZARNAS COMPANIES crane operators are required to maintain a current physical and meet physical requirements specified in API 2D as follows:
 - 8.6.4.1 Be able to distinguish between red, yellow and green
 - 8.6.4.2 20/30 Snellen in one eye and 20/50 in other eye with or without glasses and have depth perception
 - 8.6.4.3 Be able to pass a hearing exam with or without a hearing aid
 - 8.6.4.4 Have no history of disabling medical condition which may be sufficient reason for disqualification



- 8.6.5 Crane operator qualifications must be maintained every four years and include vision and medical condition evaluations.

8.7 EQUIPMENT

- 8.7.1 Modifications or additions that may affect the capacity or safe operation of the equipment must not be made without written approval from the manufacturer. A registered professional engineer must be qualified with respect to the equipment involved and must ensure the original safety factor of the equipment is not reduced.
- 8.7.2 Manufacturer procedures applicable to the operational functions of equipment, including its use with attachments, must be complied with.
- 8.7.3 Safety devices are required to be on all equipment and must be in proper working order before operations begin. If devices are not in proper working order the equipment must be taken out of service and operations must not resume until the device is working properly.
- 8.7.4 Rated load capacities, recommended operating speeds and special hazard warnings or instructions must be posted on cars and platforms.
- 8.7.5 Crane hooks should be equipped with a safety latch.
- 8.7.6 Lifting equipment will be maintained in a safe, effective working order and in good condition through a planned maintenance system. The maintenance program will include planned and recorded maintenance intervals per manufacturer recommendation or risk assessments.
- 8.7.7 The competent person will notify the supervisor immediately upon discovery of any defect in the lifting equipment that, in the opinion of the competent person is or could become a danger, so that appropriate action can be taken to repair or replace the equipment or otherwise ensure that potentially dangerous equipment is withdrawn from use.

8.8 WIRE ROPE PROGRAM

- 8.8.1 A safe and effective wire rope program will be in place prior to any crane operations.
- 8.8.2 Wire ropes must be maintained in accordance with manufacturer recommendations.
- 8.8.3 Comply with manufacturer procedures when assembling and disassembling equipment.
- 8.8.4 Wire ropes or cables will be inspected by a competent person at the time of installation and during operations and must be taken out of service if deterioration or damage is evident.
- 8.8.5 Wire ropes removed from service due to defects will be plainly marked or identified as being unfit for further use on crane or other load carrying devices.
- 8.8.6 At no time will a load be applied to a kinked rope.
- 8.8.7 Power greasing or treating of wire ropes is to be considered if ropes are to be out of commission for extended periods.

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- 8.8.8 Connections, fittings, fastenings, parts etc. used with wire cables and ropes will be of good quality, proper size and strength and installed according to manufacturer recommendations.
- 8.8.9 Socketing, splicing and seizing of wire rope will only be carried out by a qualified person that is approved by ZARNAS COMPANIES
- 8.8.10 Wire rope must be taken out of service when any of the following conditions exist:
 - 8.8.10.1 In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay
 - 8.8.10.2 Wear of $\frac{1}{3}$ the original diameter of outside individual wires
 - 8.8.10.3 Kinking, crushing, bird caging or other damage causing distortion of rope structure
 - 8.8.10.4 Evidence of any heat damage from any cause
 - 8.8.10.5 In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection

8.9 RIGGING

- 8.9.1 An important element of the ZARNAS COMPANIES material handling program is proper rigging practices. Rigging of loads must be done with relative precision and performed by trained, experienced personnel.
- 8.9.2 To ensure that safe practices are followed, a competent and qualified person must direct assembly and disassembly of equipment.
 - 8.9.2.1 Rigging equipment that has the necessary capacity to do the job is available
 - 8.9.2.2 Rigging equipment is in a safe working condition
 - 8.9.2.3 Loads are rigged correctly
 - 8.9.2.4 Safety of the rigging crew and other potentially exposed personnel is maintained
- 8.9.3 Only select rigging equipment that is in good condition.
- 8.9.4 Each sling will be inspected before being used. Slings, fastenings and attachments will be inspected by a designated competent person. Defective equipment is to be removed from service and destroyed to prevent inadvertent reuse.
- 8.9.5 The load capacity limits will be stamped or affixed to all rigging components.
 - 8.9.5.1 If crane has more than one hoisting unit, each hoist will have its rated load marked on it or its load block and this marking will be clearly legible from the ground floor.
- 8.9.6 Devices are visually inspected prior to use and damaged equipment is removed from service.

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- 8.9.7 Heavy machinery, equipment or parts which are suspended by use of slings or hoist should be substantially blocked or cribbed before men are permitted to work underneath or between them.
- 8.9.8 Determine the weight of the load - do not guess.
- 8.9.9 Determine the proper size for slings and components.
- 8.9.10 Do not use manila rope for rigging.
- 8.9.11 Ensure shackle pins and shouldered eyebolts are installed according to manufacturer recommendations.
- 8.9.12 Ensure ordinary (shoulderless) eyebolts are threaded in at least 1.5 times the bolt diameter.
- 8.9.13 Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts wherever possible.
- 8.9.14 Pad sharp edges to protect slings. Use softeners (loops, thimbles and corner pads) to prevent damage to slings when used around corners or on cutting edges.
- 8.9.15 Machinery foundations or angle iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load.
- 8.9.16 Wood, tire rubber or other pliable materials may be suitable for padding.
- 8.9.17 Do not use slings, eyebolts, shackles or hooks that have been cut, welded or brazed.
- 8.9.18 Install wire rope clips with the base only on the live end and the U-bolt only on the dead end.
- 8.9.19 Follow manufacturer recommendations for the spacing for each specific wire size.
- 8.9.20 Determine the center of gravity and balance the load before moving it.
- 8.9.21 Loads should be controlled with taglines having a length of at least 6' and no knots.
- 8.9.22 Initially lift the load only a few inches to test the rigging and balance.

8.10 SIGNALING

- 8.10.1 A signal person must be provided for the following situations:
 - 8.10.1.1 The point of operation is not in full view of the operator
 - 8.10.1.2 The view is obstructed when the equipment is traveling
 - 8.10.1.3 Operator or person handling load determines it necessary for site specific concerns
- 8.10.2 Hand, voice or audible signals are allowed. The type of signals used and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for site conditions. All directions given to the operator by the signal person must be given from the operator's perspective.

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- 8.10.3 Signals to operator will be in accordance with hand signal standards prescribed by applicable ANSI standards for the type of crane in use unless voice communications equipment is used. Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operation.
- 8.10.4 Signalers must be qualified.
- 8.10.5 Signals will be discernible or audible at all times.
- 8.10.6 Some special operations may require addition to or modification of the basic signals.
 - 8.10.6.1 Special signals will be agreed upon and thoroughly understood by both parties and will not conflict with standard signals.
- 8.10.7 Assigned signal person will give all hand signals and radio communications clearly, correctly and in sufficient time to allow the crane operator to respond. The operator's reception of signals must be by a hands-free system.
- 8.10.8 The device(s) used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear and reliable. Signal transmission must be through a dedicated channel, except:
 - 8.10.8.1 Multiple cranes/derricks and one or more signal persons may share a dedicated channel for the purpose of coordinating operations.
 - 8.10.8.2 Where a crane is being operated on or adjacent to railroad tracks, and the actions of the crane operator need to be coordinated with the movement of other equipment or trains on the same or adjacent tracks.
- 8.10.9 The ability to transmit signals between operator and signal person must be maintained. If ability is interrupted at any time, the operator must safely stop operations until signal transmission is reestablished and a proper signal is given and understood.
- 8.10.10 The crane operator should never move the machine until the signal is understood and must obey an *EMERGENCY STOP* signal from anyone.

8.11 INSPECTION

- 8.11.1 The crane operator must conduct a visual inspection of equipment prior to each shift. The inspection must consist of observation for obvious deficiencies. Some inspection items will include control mechanisms, pressurized lines, hooks and latches, wire rope, electrical apparatus, tires and ground conditions.
- 8.11.2 Inspection must include checks prior to equipment being used and checks at appropriate and periodic intervals or under prevalent conditions as may be identified by the lift plan and as a result of the risk assessment.
- 8.11.3 Equipment must be inspected monthly by a competent person. Inspection reports will detail the defects found or include a statement to the effect that the equipment is fit or unfit for continued safe use. Inspection reports will be documented and retained for three months.



- 8.11.4 Wire rope will be inspected on the following schedule:
 - 8.11.4.1 Shift inspection – Before each shift
 - 8.11.4.2 Monthly inspection
 - 8.11.4.3 Annual inspection – At least every 12 months, unless not feasible due to set up. This will be a more detailed inspection including wire rope that is normally hidden during daily or monthly inspections and the inspection will be documented.
- 8.11.5 Equipment must be inspected monthly by a competent person. A documented inspection must include the following:
 - 8.11.5.1 What items were checked
 - 8.11.5.2 Results of inspection
 - 8.11.5.3 Name and signature of who performed the inspection
- 8.11.6 All ropes and slings must be thoroughly inspected monthly and before each use and certified by recording the date of inspection, ID of the rope inspected and the signature of the person performing the inspection.
- 8.11.7 Monthly inspections will be made and documented of critical items on the crane including brakes, hooks, ropes, hoist chain, boom, back-up alarm, horn, lights and fire extinguisher.
- 8.11.8 A crane or overhead gantry that has not been used for a period of one month or more will be inspected by the employee trained to use such equipment before each use.
 - 8.11.8.1 Inspect all functional operating mechanisms.
 - 8.11.8.2 Check for damage to or leaks from lines, tanks, valves, drain pumps and air or hydraulic systems.
 - 8.11.8.3 Check the load hook for deformities or cracks.
 - 8.11.8.4 Check all hoist chains for excessive wear, including end connectors.
 - 8.11.8.5 Check all chains for kinks, twists and distorted links and stretches that are beyond what is recommended by the manufacturer.
 - 8.11.8.6 Inspect the rope for damage such as kinks, cracks, cutting, bending, broken wires and unraveling, corroded or improperly connected end connections.
 - 8.11.8.7 Hooks, if deformations or cracks are found the hook will be tagged out of service until repaired and tested by qualified personnel.
 - 8.11.8.8 Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer recommendations.



- 8.11.9 Equipment deficiencies found during inspections creating a safety hazard will be tagged *OUT OF SERVICE* until repairs are made.
- 8.11.10 Regardless of how often a crane or overhead gantry is used, the unit will be inspected annually by an outside contractor qualified to inspect the unit. This inspection will be the responsibility of the department to arrange. The contractor will document and provide the owner with a copy of the findings who will in turn provide copies to the safety director.

8.12 MAINTENANCE

- 8.12.1 Equipment will be inspected with planned maintenance schedules per the following:
 - 8.12.1.1 Before use and on each occasion (pre-use check, written record not required).
 - 8.12.1.2 At weekly intervals for items of lifting equipment in use (weekly check list required).
 - 8.12.1.3 At other intervals or under conditions identified by the manufacturer or risk assessment.
 - 8.12.1.4 Where review of lifting equipment records indicates that it may be practical to do so.
- 8.12.2 Written reports will be maintained on rated load tests showing the test procedure and confirming the adequacy of any repairs or alterations.
- 8.12.3 Preventive maintenance will be performed as prescribed by the manufacturer as detailed in the owner's manual. Maintenance of the units will be performed by an outside contractor qualified to perform maintenance.

8.13 TRAINING

- 8.13.1 Crane operators will be trained and participate in competency assessments prior to working alone. Training will take place prior to competency assessment.
- 8.13.2 Training will consist of classroom sessions, hands-on training and operator performance evaluation. At a minimum the training will comprise of:
 - 8.13.2.1 Lubricating points, adjustments, principles of crane operators, load charts, hand signals and inspections.
 - 8.13.2.2 Knowledge of regulatory requirements such as ASME, OSHA, etc.
 - 8.13.2.3 Pre-use inspections
 - 8.13.2.4 Use of fire extinguishers
 - 8.13.2.5 Signal man (dogman)/Visibility and communication during lifting operations
 - 8.13.2.6 Below hook device safety systems
 - 8.13.2.7 Stop Work Authority

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- 8.13.2.8 Environmental/weather conditions
- 8.13.2.9 Use of lifting equipment in restricted areas
- 8.13.2.10 Proximity hazards such as electrical lines or parallel activity by others
- 8.13.2.11 Prevention of load striking any person or object
- 8.13.2.12 Attaching, securing, detaching loads and tagline usage
- 8.13.2.13 Overloading lifting equipment
- 8.13.2.14 Overturning, tilting, slipping and dragging loads
- 8.13.2.15 Not working under suspended load/Not leaving loads suspended
- 8.13.3 Only trained and qualified crane operators will be allowed to operate equipment and machinery. ZARNAS COMPANIES will ensure operators are qualified by one of the following methods:
 - 8.13.3.1 Certification by an accredited crane operator testing organization
 - 8.13.3.2 Qualification by an audited employer program
 - 8.13.3.3 Qualification by the US military
 - 8.13.3.4 Licensing by a government entity
- 8.13.4 Refresher training is required every four years.

DISCIPLINARY PROGRAM

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DISCIPLINARY PROGRAM

9.1 PURPOSE

9.1.1 The purpose of this policy is to describe expectations to abide by certain work rules of general conduct and performance at all times. Supervisors are expected to monitor and enforce these work rules equally. Employees are subject to disciplinary action for any of the offenses listed. In the event an employee is suspended from work for disciplinary reasons, benefits will not accrue nor will benefits be recoverable during the suspension period.

9.2 RESPONSIBILITIES

9.2.1 All levels of supervision and management are responsible for supporting and enforcement of the disciplinary program.

9.2.2 Supervisors will make routine inspections of the worksites designed to conduct risk assessment, identify hazards and assist with control measures. In addition, they will demonstrate support of the ZARNAS COMPANIES disciplinary program through intervention and counseling of personnel.

9.2.2.1 Physical inspections of work areas must be conducted to ensure compliance with safety rules and policies.

9.2.3 The safety director is not authorized to directly discipline personnel outside of the HSE department. However, they have the authority and expectation to ensure all levels of supervision are fully aware of any activities that may require disciplinary action. HSE personnel may make recommendations of disciplinary actions following incident investigation process.

9.3 PROCEDURE

9.3.1 Violation of any ZARNAS COMPANIES policies may warrant disciplinary action. Discipline may include verbal warnings, written warnings and mandatory referral to the employee assistance program or immediate termination.

9.3.2 An orderly and efficient operation requires that employees maintain proper standards of conduct at all times. In order to prevent misunderstanding and to protect the rights of others, employees are expected to observe certain basic rules and regulations. Employees who fail to maintain proper standards of conduct are subject to disciplinary action, up to and including termination.

9.3.3 The following cases do not require progressive discipline to correct a performance deficiency. Specific examples include, but are not limited to:

9.3.3.1 Obtaining employment based on false or misleading information or falsifying information or making material omissions on any documents or records submitted or provided to or prepared for ZARNAS COMPANIES

9.3.3.2 Theft or inappropriate removal of any inventory or other property of ZARNAS COMPANIES from any ZARNAS COMPANIES office, facility or premises or theft or inappropriate removal of any inventory or property of or from any ZARNAS COMPANIES client.

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- 9.3.3.3 Insubordination, including refusal to do assigned work or refusal to perform work in the manner described by a supervisor, without proper justification.
- 9.3.3.4 Possession, consumption or selling of alcoholic beverages or using illegal drugs during working hours on company property or any violation of ZARNAS COMPANIES' procedure on drug and alcohol abuse.
- 9.3.3.5 Bringing or possessing firearms, weapons, or any other hazardous or dangerous devices on ZARNAS COMPANIES property.
- 9.3.3.6 Threatening, intimidating or assaulting a supervisor or other employee.
- 9.3.3.7 Release of confidential information.
- 9.3.3.8 Engaging in or condoning conduct that creates an intimidating, hostile or offensive work environment.
- 9.3.3.9 Fighting or provoking a fight on ZARNAS COMPANIES time or property.
- 9.3.3.10 Malicious or willful destruction or damage to ZARNAS COMPANIES property or another employee, client or visitor property.
- 9.3.3.11 Creating, or contributing to, unsanitary or poor housekeeping conditions at the premises of ZARNAS COMPANIES.
- 9.3.3.12 Sleeping on the job.
- 9.3.3.13 Making or accepting excessive personal telephone calls or using foul or obscene language on the phone.
- 9.3.3.14 Failure to report any workplace accident or personal injury in which an employee is involved to the appropriate supervisor as soon as possible.
- 9.3.3.15 Engaging in an unsafe work practice that may injure or endanger employee, someone else, the environment or damage the reputation of ZARNAS COMPANIES
- 9.3.3.16 Horseplay or other action that threatens others, damages property or disrupts work.
- 9.3.3.17 Making of false, vicious, profane or malicious statements concerning ZARNAS COMPANIES, any of its employees, clients or any client's employees.
- 9.3.3.18 Interfering with ZARNAS COMPANIES' discipline or efficiency.
- 9.3.3.19 Falsifying or destroying any timekeeping record, recording time for another employee or allowing another employee to record your time.
- 9.3.3.20 Leaving ZARNAS COMPANIES worksite during working hours without notifying a supervisor or obtaining permission, if you are a non-exempt employee.
- 9.3.3.21 Failure to abide by set times for lunch/break periods or working unauthorized overtime.

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- 9.3.3.22 Being tardy or absent in violation of company policy.
 - 9.3.3.23 Abuse of paid sick leave or personal leave.
 - 9.3.3.24 No call/no show absences for 3 consecutive days.
 - 9.3.3.25 Immoral conduct or indecency.
 - 9.3.3.26 Unlawful harassment of any kind.
 - 9.3.3.27 Violating any ZARNAS COMPANIES guidelines.
- 9.3.4 Reprimands will be documented on the *Notice of Disciplinary Action* form. A copy of each written warning will be placed in the employee personnel file. Where appropriate, the employee union representative will be notified when written reprimands are issued. The written notice will be faxed to the corporate safety director.

9.4 PROGRESSIVE DISCIPLINE

- 9.4.1 Progressive discipline provides for a series of graduated corrective actions for repeated and/or increasingly serious violation of company rules, work performance problems or conduct that is not in the best interest of the company.
- 9.4.2 Verbal warning
- 9.4.2.1 Used for most minor employee issues. Serves to verbally advise employees that their behavior or performance is unacceptable and must be improved and not repeated.
 - 9.4.2.2 The informal counseling session enables supervisor and employee to develop action steps for improvement. The supervisor should provide the employee with a brief description of the problem and an explanation on how to remedy the situation. The focus should be placed on the employees to make a decision as to whether they will be able to measure up to the job requirements.
 - 9.4.2.3 The supervisor must ensure that the employee understands what is expected of them and the consequences if those expectations are not met.
 - 9.4.2.4 Documentation, including date and facts will be on the disciplinary report form. Add any pertinent witness statements. Restate the policy and correct practice(s).
- 9.4.3 Written warning
- 9.4.3.1 Used if there is no improvement after the informal discussion. The supervisor, should prepare a written document identifying the area(s) needing improvement and identifying specific action steps required to be taken by the employee to improve the behavior or performance. If there is no improvement in the employee's behavior or performance, the supervisor should prepare documentation summarizing the problems and stating very clearly what areas need to be improved and the consequences if there is no improvement.

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- 9.4.3.2 Documentation should include the language "if there is no improvement, further disciplinary action will be taken, up to and including termination". Questions regarding written warnings are directed to the HR manager.
- 9.4.3.3 It is appropriate to have employees sign all disciplinary documents acknowledging they have read and understand the action that has/will be taken. However, if the employee refuses to sign, a simple notation *Employee refused to sign* is entered on the disciplinary form. Copies of the document will be placed in the employee's file. The original should be forwarded to HR for inclusion in the employee's central personnel file and a copy should be given to the employee. This document should stay in the employee's file as a permanent record. Should similar action occur, the supervisor may consider reinstating past disciplinary action rather than progressing to the next disciplinary level.
- 9.4.3.4 Written warnings may be presented to employees without a prior oral warning (ex. unauthorized absence or lateness, deliberate inadequate performance, failure to meet and maintain productivity standards, deliberate violation of company rules, failure to follow specified job instructions) or any other offense that is deliberate but correctable.
- 9.4.3.5 Supervisors may be requested to investigate an incident where the fact or decision-makers are not readily available. In these instances the employee may be suspended without pay until all the facts are obtained and the investigation is completed.
- 9.4.4 Termination
 - 9.4.4.1 Termination is the final step in progressive discipline, which is the result of employee failure to improve performance or conduct. Action is taken if employee performance or conduct does not improve within the time frame specified in the written warning(s) and there are no signs of improvement in the problem area(s). A termination interview should be conducted with the employee with another supervisor present.
 - 9.4.4.2 Termination is the voluntary or involuntary end of the employment relationship between the employee and ZARNAS COMPANIES.
 - 9.4.4.3 Upon termination or resignation of employment, the employee must return all ZARNAS COMPANIES supplies and property, including but not limited to ID cards, laptop equipment, name tags/badges, keys, uniforms, any ZARNAS COMPANIES training manuals, credit cards and customer lists. An employee's personal property must be removed from the premises upon resignation or termination.
- 9.4.5 ZARNAS COMPANIES' philosophy is that good relations and communication between employees and management are essential. Problem solving can start with the employee. Employees are encouraged to request discussion time with their supervisor whenever necessary.
- 9.4.6 ZARNAS COMPANIES encourages employees to contact their supervisor regarding a work related controversy, complaint, dispute or misunderstanding. The following has been established to address these problems:
 - 9.4.6.1 Discuss the situation with immediate supervisor.

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9.4.6.2 If not satisfied with supervisor answer, contact department manager or HR department who will try to resolve the problem.

9.4.6.3 If still not satisfied, continue up the chain of command, up to and including the ZARNAS COMPANIES president.

9.4.7 As in all disciplinary actions, each situation is to be carefully evaluated and investigated. The particular step taken in the disciplinary process will depend on the severity of the violation, employee history and regard to safety. Supervisors should consult with the office if there is any question about whether or not disciplinary action is justified. Employees may be terminated immediately for willful or extremely serious violations.

9.4.8 Managers and supervisors must be consistent in the enforcement of all safety rules.

9.5 SAFETY INCENTIVE PROGRAM

9.5.1 Although strict adherence to safety policies and procedures is required of all employees, the company may choose to periodically provide recognition of safety conscious employees and jobsites without incidents through a safety incentive program.

9.6 TRAINING

9.6.1 The importance of safe work practices and the consequences of failing to abide by safety rules will be covered in new employee safety orientation and safety meetings. This will help ensure that all employees understand and abide by company safety policies.

9.6.2 Employees that are observed performing unsafe acts or not following proper procedures or rules will be retrained by their supervisor. A safety contact report may be completed by the supervisor to document the training. If multiple employees are involved, additional safety meetings will be held.

DRUG-FREE WORKPLACE POLICY

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DRUG-FREE WORKPLACE POLICY

10.1 PURPOSE

10.1.1 The purpose of this *Drug-Free Workplace Policy* is to maintain the highest safety, health and work performance standards possible and to reduce work related accidents, injuries and damage which may be caused by drug or alcohol use. This policy is also intended to ensure the maintenance of productivity, the quality of products and services and the security of property. The primary concern of ZARNAS COMPANIES is the health and welfare of our employees. We are committed to providing a safe working environment to protect our employees and others, to provide the highest level of service and to minimize the risk of incidents.

10.2 GENERAL CONSIDERATIONS

- 10.2.1 Private employers have greater latitude in implementing a substance abuse program than public employers. Similarly, non-union employers have more freedom than union employers and greater freedom exists in requiring tests for applicants than for current employees. The more critical, hazardous or safety sensitive the position, generally the more latitude.
- 10.2.2 In the union context, an employer is usually required to bargain with the union over development and implementation of substance abuse policies because the substance abuse policy is considered a condition of employment. On the other hand, a non-union employer may unilaterally institute a substance abuse policy.
- 10.2.3 The work rules should be consistently enforced, especially in a unionized company.
- 10.2.4 Employees should be put on notice as to the existence of the policy, especially the work rule component and the consequences of violations.
- 10.2.5 Supervisors should be alert to identify employee drug use as well as violations of the policy.
- 10.2.6 In the union context, an employer may not be able to rely solely upon results of a drug test alone to justify an employee discharge, but such tests are nevertheless relevant evidence that employees have in fact used drugs.
- 10.2.7 Specific laws and regulations exist for employers in particular industries. This policy is not intended to comply with the laws and regulations involved in any of these specialized situations.

10.3 ALCOHOL AND DRUG USE/DISTRIBUTION/POSSESSION

- 10.3.1 All employees are prohibited from manufacturing, cultivating, distributing, dispensing, possessing or using illegal drugs or other unauthorized or mind-altering or intoxicating substances while on ZARNAS COMPANIES property (including parking areas and grounds) or while otherwise performing work duties away from ZARNAS COMPANIES. Included within this prohibition are lawful controlled substances which have been illegally or improperly obtained. This policy does not prohibit the possession and proper use of lawfully prescribed drugs accordingly.
- 10.3.2 Employees are prohibited from having any illegal or unauthorized controlled substances or excessive amounts of otherwise lawful controlled substances in their system while at work.

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- 10.3.3 Employees are prohibited from distributing, dispensing, possessing or using alcohol while at work or on duty. Employees are prohibited from having alcohol in their system while at work or on duty.
- 10.3.4 The proper use of medication prescribed by your physician is not prohibited, however misuse of prescribed medication is prohibited. Employees will be permitted to bring prescription drugs to the worksite for treatment of an illness, provided only sufficient medication corresponding to the dosage for a twelve hour period is retained.
- 10.3.5 Use of a legal drug may pose a significant risk to the safety of the employee or coworkers. Any employee using prescription and/or over-the-counter drugs that may affect job performance or alter their behavior must consult with their physician regarding the effects of such use or the employee's ability to perform assigned duties. Employees can report the use of prescription or nonprescription drugs which may affect drug tests by completing a written consent form to support legal drug use and fitness for duty. Unauthorized use of prescription drugs or use inconsistent with the physician's instructions is a violation of this policy and grounds for discipline, up to and including termination.
- 10.3.6 Employees bringing prescription drugs to the worksite must notify their supervisor as to what drug they are taking and the prescribed dosage. The employee must be prepared to show supervision both the prescribed drug container and prescription. Outdated prescription drugs are not allowed.
- 10.3.7 Employees are responsible for exercising good judgment when taking prescription or non-prescription drugs. It is their responsibility to determine from their physician whether a prescribed drug may impair job performance. If the effects of the medication impair the ability to perform the job safely or effectively, they must immediately notify their supervisor.

10.4 ENFORCEMENT

- 10.4.1 In order to enforce this policy and procedures, ZARNAS COMPANIES may investigate potential violations and require personnel to undergo drug/alcohol screening, including urinalysis, blood tests or other appropriate tests and, where appropriate, searches of all areas of ZARNAS COMPANIES physical premises, including, but not limited to work areas, personal articles, lockers and personal and company vehicles, etc. Employees will be subject to discipline up to and including discharge for refusing to cooperate with searches or investigations, to submit to screening or for failing to execute consent forms when required by supervision.
 - 10.4.1.1 The use, possession, sale and/or distribution of drugs or alcohol or unauthorized substances or the presence of such substances in a person's body is prohibited and constitutes a violation of this policy.
 - 10.4.1.2 Reporting to work or working while under the influence of a prescribed/authorized drug is prohibited if use impairs performance or the ability of the employee to work safely.
- 10.4.2 Strict adherence to the policy and procedures embodied within this *Drug-free Workplace Policy* is a condition of employment for all ZARNAS COMPANIES personnel.
- 10.4.3 Disciplinary action for violation of this policy or any of its provisions may result in discipline up to and including termination of employment.

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- 10.4.4 ZARNAS COMPANIES reserves the right to notify appropriate law enforcement officials regarding employees who engage in conduct and activities which violate this policy.
- 10.4.5 ZARNAS COMPANIES is required by federal law to report to the appropriate federal agency, all workplace drug related convictions of its employees. Any employee convicted of a workplace drug related offense must notify the HR department in writing within five days of the conviction.
- 10.4.6 Off premises involvement with illegal drugs may have an adverse effect on an employee's on-the-job performance. The unlawful involvement with illegal substances outside company premises will constitute grounds for severe disciplinary action, up to and including termination.
- 10.4.7 ZARNAS COMPANIES recognizes the existence of federal regulations, including those of the Department of Transportation, Federal Highway Administration and certain state and local legislation regarding workplace drug testing. When such regulations or legislation apply and impose obligations on ZARNAS COMPANIES which conflict with or are in addition to, those obligations set forth in this policy, ZARNAS COMPANIES will endeavor to follow the applicable regulations or legislation.

10.5 TESTING

- 10.5.1 All employees to the extent permitted by federal, state and local laws will be required to undergo testing for the presence of alcohol or unauthorized drugs in their system. ZARNAS COMPANIES will conduct drug tests in the following circumstances.
 - 10.5.2 *Pre-employment screening*
 - 10.5.2.1 As part of ZARNAS COMPANIES's employment procedures, applicants will be required to undergo a post-offer, pre-employment drug screen that is conducted by a contractor designated by the company. Any offer of employment is contingent upon, among other things, a negative result upon completion of this screening and the determination by ZARNAS COMPANIES that the applicant is capable of performing the responsibilities of the position that has been offered.
 - 10.5.2.2 Refusal to submit or a positive confirmed drug test may be used as a basis for refusal to hire the applicant. Applicants may provide a list of prescription and non-prescription drugs being taken at the time of the screen and upon request provide a valid prescription dated prior to the testing.
 - 10.5.2.3 Any such applicant whose test result is positive will not be allowed to start work. Any applicant testing positive may reapply for employment 180 days after the date of their previous pre-employment substance abuse test.
 - 10.5.2.4 Individuals hired to work in temporary positions - *employment planned for 60 days or less, including summer employment* - are not required to submit to pre-employment substance abuse testing. Individuals hired to work in temporary positions that will work with hazardous materials and/or operate commercial motor vehicles, *will be required* to submit to pre-employment substance abuse testing. If temporary employees are still employed 60 days after the start of their temporary assignment, they are required to consent to and submit to a substance abuse test. All other provisions of this policy apply to temporary employees.

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10.5.3 *Reasonable Suspicion*

- 10.5.3.1 Employees may be required to submit to drug/alcohol screening whenever a supervisor has a reasonable suspicion they have violated rules of this policy.
- 10.5.3.2 Supervisors will receive permission from management before initiating a drug test based on reasonable cause.
- 10.5.3.3 Reasonable suspicion may arise from supervisory observation, a pattern of abnormal conduct or erratic behavior, coworker complaints, performance decline, arrest or conviction for a drug related offense, attendance or behavioral changes, results of drug searches or other detection methods or involvement in a workplace incidents.
- 10.5.3.4 An employee tested for reasonable cause will be suspended immediately and removed from the worksite pending confirmation of the results.

10.5.4 *Random Selection*

- 10.5.4.1 Employees at each worksite will be selected for testing on a quarterly basis. A random computer-generated selection process will be utilized. The selection process is set up to ensure that each employee is tested at least once every two years. The number of tests conducted each year corresponds to at least 50% of the individual jobsite.
- 10.5.4.2 Computer generated testing will include all employees and is conducted unannounced. A non-company testing group will use objective software that ensures a random selection process in which all employees in the testing pool have an equal statistical likelihood of being selected for testing. When the next random draw is conducted, all employees are again included in the pool with an equal chance of selection, regardless of whether an employee was previously selected. It will be the responsibility of ZARNAS COMPANIES to notify each employee who is selected with date, time and location of the testing. When notified, it will be the responsibility of the employee to provide a urine specimen for drug testing and/or submit to breath-alcohol testing. An employee's failure to comply with the request for a specimen for computer generated testing will result in termination of employment.

10.5.5 *Post-Incident*

- 10.5.5.1 If an employee's actions have caused or are suspected to have caused an incident involving an explosion or fire, loss or spill of hazardous materials, bodily injury or death of any person, equipment or property damage or the need for medical treatment of any kind, that employee is subject to immediate drug and/or alcohol testing. Likewise, the employee is subject to immediate testing if involved in a near miss incident.
- 10.5.5.2 Post-incident testing will be conducted within 32 hours of the incident. Breath or saliva alcohol testing will be performed within 2 hours of the incident whenever possible, at least within 8 hours or it will not be performed but will be documented.
- 10.5.5.3 An employee receiving a positive result on a post-incident drug/alcohol screen will be immediately suspended pending confirmation of the results.

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- 10.5.6 *Follow up* testing occurs when an employee who has previously tested positive is allowed to return to work in the event of a *second chance* or *last chance* agreement. A return to duty test is required before the employee is allowed to return to work. If the employee fails this test, employment will be terminated. Any employee with a second positive test result will be terminated.
- 10.5.7 Employees whose job requires a physical examination as part of their ongoing employment will also be required to submit to substance abuse testing as part of any physical examination.
- 10.5.8 At management's discretion, employees may be subject to additional testing for unauthorized substances, beyond pre-employment, reasonable suspicion or random selection tests.
- 10.5.9 Any employee who is offered a promotion to a higher level position will be subject to substance abuse testing. This provision applies to individuals whose job will involve supervision of employees who work with hazardous chemicals, waste and/or operate commercial vehicles.
- 10.5.10 Occasionally a ZARNAS COMPANIES customer will require that employees involved in servicing their account be certified *drug-free* as a condition of receiving that customer's business. ZARNAS COMPANIES complies with all such requests and will perform substance abuse testing, as necessary, of employees who are involved with the servicing of customer accounts that require drug free certification.
- 10.5.11 The testing program consists of an initial screening test. If the initial results are positive, then a confirmation is used.

SUBSTANCE	INITIAL TEST	CONFIRMATION TEST
Amphetamines (speed, uppers)	500 ng/ml	250 ng/ml
Cocaine (including Crack)	150 ng/ml	100 ng/ml
Cannabinoids (Marijuana)	50 ng/ml	15 ng/ml
Opiates (Codeine, Morphine)	2000 ng/ml	2000 ng/ml
Phencyclidine (PCP, "Angel Dust")	25 ng/ml	25 ng/ml
MDMA (Ecstasy)	500 ng/ml	250 ng/ml
Methadone	300 ng/ml	300 ng/ml
Alcohol	0.04 BAC	0.04 BAC
Barbiturates	300 ng/ml	300 ng/ml
Benzodiazepines	300 ng/ml	300 ng/ml
Propoxyphene	300 ng/ml	300 ng/ml

- 10.5.12 ZARNAS COMPANIES expressly reserves the right to add or delete substances on the list above, especially if mandated by changes in existing federal, state or local regulations or legislation.
- 10.5.13 Whenever an employee or applicant for employment is scheduled to take a substance abuse test, a new consent form must be completed.
- 10.5.14 Any employee who refuses to take a drug or alcohol test or who fails a drug or alcohol test will be removed from the worksite and suspended immediately. Employees refusing or failing a drug or alcohol test is prohibited from further employment with the company.
- 10.5.15 ZARNAS COMPANIES reserves the right to suspend an employee, with or without pay, pending the results of a substance abuse test. In the event that the suspension is without pay and the test result is later negative, employee will be reimbursed for time missed as a result.

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10.6 SAMPLING PROCEDURES

- 10.6.1 Testing will be conducted by trained collection personnel, who meets quality assurance and chain-of-custody requirements for urine collection and breath-alcohol testing. The responsibilities of the MRO will include review of test results and laboratory performance to maintain validity of the program. All test results will be handled with strict confidentiality.
- 10.6.2 A drug/alcohol testing custody and control form is used for each test.
- 10.6.3 Any initial drug screening that indicates positive will be confirmed. If the subsequent test indicates a negative result, the sample will be considered as testing negative. Any drug sample testing negative is discarded and a negative test report is sent by the laboratory to the company for documentation. The employee tested may be notified of the negative result. All samples confirmed positive will be retained for one year by the laboratory.
- 10.6.4 Employees who are found to have a positive drug or alcohol test will be immediately taken off the job (not be allowed to work on a client site or facility) until confirmation test results are available. The MRO will contact the employee and any appropriate health care provider to determine whether there is a valid reason for the presence of the drug. If negative results are received, the employee will return to work with back pay. In all other cases, employees are subject to discipline up to and including termination. For any drug testing sample confirmed positive, the employee will have sixty days to request a retest of the original sample.
- 10.6.5 An employee is positively identified prior to each test by some form of picture bearing identification.
- 10.6.6 The sampling procedure will be conducted in a manner which will not demean or otherwise embarrass the employee, while ensuring the validity of the sample.
- 10.6.7 An employee attempting to alter a specimen or otherwise manipulate the testing process will result in termination of employment, as will a refusal to produce/provide a specimen.
- 10.6.8 Any individual subject to testing under this policy will be permitted to provide urine specimens in private, but subject to strict scrutiny by collection personnel so as to avoid any alteration or substitution of the specimen to be provided. Breath alcohol testing will likewise be done in an area that affords the individual privacy. In all cases, there will only be one individual tested at a time. Failure to appear for testing when scheduled will be considered refusal to participate in testing.
- 10.6.9 Upon request, reports of test results will be made available to the client via the MRO if it is a condition of employment. Test results will be made available to state and federal agencies for use in investigations, provided the request is accompanied by proper documentation.

10.7 INVESTIGATIONS AND SEARCHES

- 10.7.1 When supervision has reasonable suspicion that an employee has violated the *Drug-Free Workplace Policy*, the supervisor may inspect vehicles, lockers, work areas, bags and other locations or belongings without prior notice, in order to ensure a work environment free of prohibited substances.
- 10.7.2 Employees are hereby notified that locked areas or containers do not prevent a search and thus employees should understand there is no expectation of privacy on ZARNAS COMPANIES

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premises. Employees may be asked to be present and remove personal locks. Where the employee is not present or refuses to remove a personal lock, ZARNAS COMPANIES may do so for him or her and compensate the employee for the lock.

10.7.3 ZARNAS COMPANIES may use unannounced drug detection methods. Failure of the employee to cooperate in a search or inspection will be grounds for termination.

10.8 EMPLOYEE ASSISTANCE

10.8.1 Employees will have the opportunity to receive information about substance use as a workplace problem, signs and symptoms, dangers of use and how and where to get help. As part of the maintenance of a drug-free work environment, ZARNAS COMPANIES will promote substance abuse education programs for all employees.

10.8.2 ZARNAS COMPANIES holds all employees accountable in terms of substance use but also supports getting help. Employees who come forward voluntarily to identify they have a substance problem will receive support and assistance. If employee does not come forward and then tests positive for drug or alcohol use in violation of this policy, ZARNAS COMPANIES reserves the right to take appropriate action up to and including termination.

10.8.3 ZARNAS COMPANIES realizes that employees may need assistance in dealing with substance abuse. Any employee needing help is urged to voluntarily (prior to the employee being scheduled for any type of substance abuse test) come forward and request assistance. The company currently provides assistance to employees through an *Employee Assistance Program (EAP)*.

10.8.4 Employees are encouraged to seek help for a drug or alcohol problem before it deteriorates in a disciplinary matter. If an employee voluntarily notifies supervision that he or she may have a substance abuse problem, the company will assist in locating counseling and referral services for treatment and will advise the employee regarding any medical benefits available under the company or union health and welfare insurance program.

10.8.5 It is the employee's responsibility to follow appropriate company policy (refer to the ZARNAS COMPANIES HR *Medical Leave Policy*) when seeking medical assistance for a substance abuse problem. ZARNAS COMPANIES medical benefit plan may provide for payment of some costs associated with substance abuse treatment. Refer to the appropriate medical plan brochures for specific details and provisions and limitations of coverage.

10.8.6 Employees are subject to signing a *second chance* or *last chance* agreement acknowledging that a second violation of the policy will result in termination of employment. Employee will be tested prior to being allowed to return to work and must produce a negative test result and will be subject to accelerated testing thereafter in conjunction with the substance use professional.

10.9 NOTIFICATION OF IMPAIRMENT

10.9.1 Workers who observe or have knowledge of another worker in a condition which impairs them from performing the job duties, presents a hazard to the safety and welfare of others or is otherwise in violation of this policy, must promptly report the situation to their immediate supervisor. Supervisors are trained to determine if an employee is under the influence of a substance. If a supervisor is in doubt they are to notify management immediately.

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10.10 ACKNOWLEDGEMENT

10.10.1 Employee applicants are required to review the company *Drug-free Workplace Policy* and acknowledge in writing that they have read, understand and agree to comply.

10.10.2 Any questions regarding the ZARNAS COMPANIES *Drug-free Workplace Policy* should be addressed to the ZARNAS COMPANIES safety director.

10.11 RECORDKEEPING

10.11.1 All training records, documents, test information and other materials generated as a result of the *Drug-free Workplace Policy* will be retained for a period of not less than 5 years.

10.11.2 The safety director will be responsible for proper recordkeeping.

10.12 TRAINING

10.12.1 All training on drug and alcohol requirements is done through the required training curriculum.

10.12.2 Employees will receive annual substance awareness education from a qualified person to help identify problems and learn where to turn to for help.

10.12.3 Supervisors will be trained to recognize substance problems that may endanger the employee and others as well as violate this policy. This training is in addition to annual employee education. Supervisors will be trained about testing responsibilities, how to recognize behaviors that demonstrate an alcohol/drug problem and how to make referrals for help.



AGREEMENT TO SUBMIT TO DRUG AND/OR ALCOHOL SCREEN BY BLOOD AND/OR URINE TESTS AND AUTHORIZATION FOR THE RELEASE OF MEDICAL INFORMATION

I have been requested to submit to a drug and/or alcohol screen by blood and/or urine and/or hair tests and medical assessment.

I have been informed and I understand, that my agreement to submit to the requested alcohol and/or drug screens by blood and/or urine is completely voluntary on my part, and that I have the right to refuse to submit to the tests. I am aware and have been told, that my refusal to submit to the drug and/or alcohol screen by blood and/or urine and/or hair tests and/or medical assessment may be grounds for disciplinary action against me up to and including termination.

I have also been informed and am aware and hereby authorize that the results of this drug and/or alcohol screen by blood and/or urine and/or medical assessment may be released to ZARNAS COMPANIES and such other company officials that may be determined if it is necessary to disclose such information. I understand that the information so released to the company will be used to determine whether I was fit to perform my job duties, and/or whether I had violated the company's work rules concerning drug and alcohol use and that the results of such test(s) may form the basis for disciplinary action against me, up to and including termination.

With full knowledge of the above information, I have decided to voluntarily submit to the requested drug and/or alcohol screen by blood and/or urine and/or medical assessment and in recognition of this agreement, do sign this consent form.

Applicants for hire will not be employed if a confirmed positive test is returned. Applicants will not be eligible for hire if they refuse to submit to a drug and/or alcohol screen.

Employee Granting Release (printed)

Last Four Numbers of SSN

Employee Signature

Date

Superintendent Signature

Date



ACKNOWLEDGEMENT RECEIPT OF DRUG-FREE WORKPLACE POLICY

CONSENT AND RELEASE FORM

Signing this form acknowledges that the employee has received a copy of ZARNAS COMPANIES's *Drug-Free Workplace Policy*, has had the opportunity to discuss the policy and have questions answered and understands all of the provisions in the policy. Although it reflects the current policy regarding substance use, it may be necessary to make changes from time to time to best serve the needs of our organization. However, any changes deemed necessary will be made in writing, and the modified policy will be shared with every employee.

By my signature below, I acknowledge that I have received a copy of the *Drug-Free Workplace Policy* of ZARNAS COMPANIES I understand that it is my obligation to read, understand and comply with the procedures and provisions contained within this policy including but not limited to:

1. I agree to cooperate in all aspects of the testing program.
2. That the company policy requires me to submit to urine drug testing and/or breath-alcohol testing.
3. I hereby freely and voluntarily consent to this request for a urine sample and/or breath-alcohol test and agree to participate in the testing program.
4. That the purpose of this analysis is to determine or rule out the presence of non-prescribed or prohibited dangerous controlled substances in my system.
5. I hereby authorize the release of my drug and/or breath-alcohol test results to the contractor's Medical Review Officer (MRO), and/or to the company's examining physician, as provided by the company policy.
6. I hereby and herewith release the company, its employees, agents and contractors from any and all liability whatsoever arising from this request for testing, from the actual testing procedures and from decisions made concerning my application for or continuation of employment based on the results of the analysis.
7. I further acknowledge that the company has provided me with an opportunity to ask questions related to its drug and alcohol testing program and that all my questions have been answered.

Employee Name (printed)

Last Four Numbers of SSN

Employee Signature

Date

Witness Signature

Date

ANTI-DRUG AND ALCOHOL MISUSE PREVENTION PLAN

U.S. DEPARTMENT OF TRANSPORTATION
PIPELINE & HAZARDOUS MATERIALS SAFETY ADMINISTRATION (PHMSA)
PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF:
49 CFR PART 199
49 CFR PART 40

G.C.Zarnas & Company

850 Jennings Street Bethlehem, PA 18017

610-866-0923

ORIGINAL DATE OF IMPLEMENTATION: Feb 27, 2013

NEW EFFECTIVE DATE: Feb 27, 2013

PLAN REVISION DATE: January 4, 2011
©NATIONAL COMPLIANCE MANAGEMENT SERVICE, INC. (NCMS)
REVISION DATE MODIFIED BY NCMS ONLY

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I. INTRODUCTION

1. Development of “Combined” Plan

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is the agency within the Department of Transportation (DOT) that regulates operators in the natural gas and hazardous liquid pipeline industry. PHMSA’s Drug and Alcohol Testing Regulation, 49 CFR Part 199¹, requires each operator to develop, maintain, and follow an Anti-Drug Plan and an Alcohol Misuse Prevention Plan. Historically, companies have produced these plans as two separate documents. This “combined” Anti-Drug and Alcohol Misuse Prevention Plan,” merges both PHMSA-required plans into a single document.

Authorization for a combined plan was granted by PHMSA’s Office of Pipeline Safety stating: “PHMSA will allow the combining of the two plans into one written plan, as long as all requirements of each regulation are met.” The “requirements of each regulation” means the requirements of Part 199 and the requirements of DOT’s “Procedures for Transportation Workplace Drug and Alcohol Testing,” 49 CFR Part 40².

The Anti-Drug and Alcohol Misuse Prevention Plan, henceforth referred to as the “Plan,” meets all the requirements of Part 199 and Part 40.

2. Approach

The Plan will use the generic word “*Company*” in reference to the operator or contractor, as applicable, for which it is written. PHMSA’s requirement for plan development and implementation applies equally to each operator and contractor that performs safety-sensitive operations, maintenance, or emergency-response functions on a pipeline or LNG facility within the natural gas and hazardous liquid pipeline industry. The Plan will describe how the Company will comply with government requirements. In any case where there is a discrepancy between the requirements of Part 40 with that of Part 199, Part 40 will prevail.

The Plan will identify “Company-additional” requirements – those that go beyond the minimum requirements of DOT. Company-additional requirements will be underscored. Therefore, consider anything that is not underscored a requirement of DOT or a process put in place by the Company to meet a DOT requirement. Appendix D outlines the Company disciplinary actions and additional procedures.

The Plan is written in “plain language” and follows the requirements of each rule. However, the Plan does not repeat the language of either Part 40 or Part 199. Doing so would require the Company to produce a new plan every time DOT or PHMSA issued a change to their respective rule. The goal of DOT is to know that the Company understands the requirements of the rules and how the Company will go about achieving compliance. The Plan makes use of existing DOT language in places where summaries are used to explain a more detailed process (e.g., specimen collection and alcohol test procedures are extracted from DOT’s “Employee Guide”³).

¹ Title 49 Code of Federal Regulations (CFR), Part 199, “Drug and Alcohol Testing Requirements,” Pipeline and Hazardous Materials Safety Administration, Department of Transportation, 53 FR 47096, Nov. 21, 1988 as amended.

² Title 49, Code of Federal Regulations (CFR), Part 40, “Procedures for Transportation Workplace Drug and Alcohol Testing Programs,” Office of the Secretary, Department of Transportation, 65 FR 79462, Dec. 19, 2000 as amended.

³ “What Employees Need To Know About DOT Drug & Alcohol Testing,” ODAPC, DOT, October, 2010.

Cross references are made linking the Plan to the PHMSA Inspection Form⁴ for the purpose of assisting inspectors with specific areas of Plan compliance. The cross references will appear in the Plan as superscripted “endnotes”. Each endnote matches an inspection number and description from the PHMSA Inspection Form. The Inspection Form cross references is found in Appendix E.

3. Background

Safety. The DOT requires transportation employers to develop and implement drug and alcohol testing programs in the interest of public safety. Safety is the highest priority for DOT. One of the means by which the DOT helps ensure safety is by subjecting those workers responsible for transportation safety to drug and alcohol testing. Workers tested under the DOT program have direct impact on the safety of the traveling public or the safety of those potentially affected by the transportation of hazardous products, such as natural gas, liquefied natural gas (LNG) and hazardous liquids.

Test Procedures. The overall responsibility for management and coordination of the DOT program resides within the Office of the Secretary of Transportation’s (OST), Office of Drug and Alcohol Policy and Compliance (ODAPC). ODAPC issues Part 40. Whether the transportation employee is a pipeline worker, truck driver, or airline pilot, their drug and alcohol tests are conducted using the same Part 40 procedures. This consistency benefits all employees affected by DOT regulations in that each agency’s regulations must adhere to DOT’s testing procedures. Better known simply as “Part 40,” this rule has become the standard for workplace testing in the United States.

Compliance Enforcement. Regulation and enforcement within the different transportation industries is the responsibility of the DOT agency that has authority over the particular industry. The regulatory authority requiring drug and alcohol testing of safety-sensitive employees in aviation, trucking, railroads, and mass transit industries is the Omnibus Transportation Employee Testing Act of 1991⁵ (OTETA). The OTETA did not specifically address the pipeline industry. PHMSA has regulatory authority over the pipeline industry and conveyed their authority, for drug and alcohol testing, through the issuance of their regulation -- Part 199. Part 199 spells out *who* is subject to testing, *when* and in *what* situations. Operators, and in turn, their associated contractors, implement the regulations.

II. GENERAL

1. Scope

Operators of pipeline facilities subject to 49 CFR Parts 192⁶, 193⁷, or 195⁸ are required to test covered employees for the presence of prohibited drugs and alcohol. Contractors doing similar work on the behalf of their operators are subject to the same requirements. Part 199 requires of each operator the assurance that any contractor performing any DOT safety-sensitive work for that operator, under Parts 192, 193, or 195, is in full compliance with the provisions of the DOT’s drug and alcohol program, as applicable.

⁴ “Substance Abuse Program: Comprehensive Audit and Inspection Protocol Form, Combined Anti-Drug and Alcohol Misuse Programs, Form No.: 3.1.11, January 29, 2010” Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety.

⁵ Public Law 102-143, October 28, 1991, Title V – Omnibus Transportation Employee Testing, 105 Stat. 952-965; 49 U.S.C. 45104(2).

⁶ Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards

⁷ Part 193 – Liquefied Natural Gas Facilities: Federal Safety Standards

⁸ Part 195 – Transportation of Hazardous Liquids by Pipeline

2. Applicability

Part 199, and the provisions of the Plan, applies to operators and contractors only with respect to their employees located within the territory of the United States, including those employees located within the limits of the “Outer Continental Shelf.” Part 199 and the provisions of the Plan do not apply to covered functions performed on master meter systems or pipeline systems that transport only petroleum gas or petroleum gas/air mixtures.

3. Compliance^{1 2}

Plan Development . The Plan meets the requirement of Part 199, paragraphs §199.101 and §199.202, respectively, to develop a written anti-drug plan and a written alcohol misuse prevention plan. The Plan describes the methods and procedures for compliance with the drug and alcohol program requirements of the DOT, including the employee assistance program. The Plan covers the operational, day-to-day requirements that are found in Part 199, and the procedural, testing requirements that are found in Part 40. The Plan provides appendices for the name and address of each laboratory that analyzes specimens for the Company, the Company’s Medical Review Officer, and Substance Abuse Professionals. The Plan communicates to employees, Company officials, and DOT officials the path that the Company will follow in order to comply with the requirements for a successful DOT drug and alcohol program.

Plan Availability . The Plan will be posted in a common place, selected by the Company, for employee review and feedback. A copy of the Plan will be made available to all covered employees. Any covered employee desiring a copy of Part 40 and/or Part 199 must contact the Designated Employer Representative (see Appendix B). The Plan provides a basic description of the rules and testing requirements, and shows how the Company implements and follows them. The Plan is not meant as a substitute for the detail provided in either rule. If there is any difference in instruction or interpretation between the Plan and the rules, the rules prevail. The Plan will be updated at any time its language, or the intent of its language, differs from that of either Part 40 or Part 199. Employees are encouraged to obtain and read Part 40 and Part 199 on their own.

4. “DOT” vs. “PHMSA”

All DOT workplace testing procedures will follow Part 40 requirements. All DOT procedural responsibilities for pipeline operators and contractors will follow Part 199. In the Plan, the term “DOT” will be used for references to general requirements (e.g., testing procedures) placed on all transportation employers, including operators and contractors. The use of the term “PHMSA” will be to distinguish specific, unique administration requirements versus general, DOT requirements (e.g., random alcohol testing is not authorized by PHMSA).

5. DOT Procedures

The Company will assure that the procedures of Part 40 are followed for drug and alcohol testing conducted under the requirements and authority of Part 199; a violation of Part 40 is a violation of Part 199. If the Company employs a Consortium/Third-Party Administrator (C/TPA) to assist in program development, implementation, and management, the C/TPA will, likewise, follow all the requirements of Part 40 and Part 199. It is the Company’s goal to establish and maintain compliance with the DOT drug and alcohol program.

6. Stand-down Waiver³

DOT “stand-down” is not in effect for this Company. The Company does not hold a stand-down waiver under Part 40, and has not applied for one. Should this status change, the Company will notify all covered employees and Company officials, in accordance with Part 40 requirements.

7. Preemption of State and Local Laws

Part 40 and Part 199 are Federal laws. Federal law preempts any state or local law, rule, regulation, or order to the extent that: (a) compliance with both the state or local requirement and Part 40 or 199

is not possible; or, (b) compliance with the state or local requirement is an obstacle to the accomplishment and execution of any requirement of Part 40 or 199; or, (c) the state or local requirement is a pipeline safety standard applicable to interstate pipeline facilities. This provision does not preempt provisions of state criminal law that impose sanctions for reckless conduct leading to actual loss of life, injury, or damage to property, whether the provisions apply specifically to transportation employees or employers or to the general public.

8. Definitions

Definitions from Parts 40, 191, 195, and 199 have been combined in alphabetical order and are provided in a single listing. For purposes of the Plan the following definitions apply:

Accident - An incident reportable under Part 191 involving gas pipeline facilities or LNG facilities or an accident reportable under Part 195 involving hazardous liquid pipeline facilities.

a) (§191.3) – An accident on a gas pipeline or LNG facility is defined as an "incident," as follows:

- (1) An event that involves a release of gas from a pipeline, or of liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences:
 - (a) A death, or personal injury necessitating inpatient hospitalization; or
 - (b) Estimated property damage of \$50,000 or more (\$5,000 or more for intrastate operators/contractors in Oklahoma and New Mexico), including loss to the operator and others, or both, but excluding cost of gas lost;
 - (c) Unintentional estimated gas loss of three million cubic feet or more;
- (2) An event that results in an emergency shutdown of an LNG facility. Activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident.
- (3) An event that is significant, in the judgment of the operator, even though it did not meet the criteria of paragraphs (1) or (2).

b) (§195.50) – An accident report is required for each failure in a pipeline system in which there is a release of the hazardous liquid or carbon dioxide transported resulting in any of the following:

- (1) Explosion or fire not intentionally set by the operator.
- (2) Release of 5 gallons (19 liters) or more of hazardous liquid or carbon dioxide, except that no report is required for a release of less than 5 barrels (0.8 cubic meters) resulting from a pipeline maintenance activity if this release is:
 - (a) Not otherwise reportable under this section;
 - (b) Not one described in §195.52(a)(4);
 - (c) Confined to Company property or pipeline right-of-way; and
 - (d) Cleaned up promptly;
- (3) Death of any person.
- (4) Personal injury necessitating hospitalization;
- (5) Estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding \$50,000.

Administrator - The Administrator of the Pipeline and Hazardous Materials Safety Administration (PHMSA) or any person to whom authority in the matter concerned has been delegated by the Secretary of Transportation.

Adulterated specimen - A specimen that has been altered, as evidenced by test results showing either a substance that is not a normal constituent for that type of specimen or showing an abnormal concentration of an endogenous substance.

Affiliate - Persons are affiliates of one another if, directly or indirectly, one controls or has the power to control the other or a third party controls or has the power to control both. Indicators of control include, but are not limited to: interlocking management or ownership; shared interest among family members; shared facilities or equipment; or common use of employees. Following the issuance of a Public Interest Exclusion (PIE), an organization having the same or similar management, ownership, or principal employees as the service agent concerning who public interest exclusion is in effect is

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regarded as an affiliate. This definition is used in connection with the public interest exclusion procedures of Part 40, Subpart R.

Air blank - In evidential breath testing devices (EBTs) using gas chromatography technology, a reading of the device's internal standard. In all other EBTs, a reading of ambient air containing no alcohol.

Alcohol - The intoxicating agent in beverage alcohol, ethyl alcohol or other low molecular weight alcohols, including methyl or isopropyl alcohol.

Alcohol concentration - The alcohol in a volume of breath expressed in terms of grams of alcohol per 210 liters of breath as indicated by a breath test under this part.

Alcohol confirmation test - A subsequent test using an EBT, following a screening test with a result of 0.02 or greater, that provides quantitative data about the alcohol concentration.

Alcohol screening device (ASD) - A breath or saliva device, other than an EBT, that is approved by the National Highway Traffic Safety Administration (NHTSA) and placed on a conforming products list (CPL) for such devices.

Alcohol screening test - An analytic procedure to determine whether an employee may have a prohibited concentration of alcohol in a breath or saliva specimen.

Alcohol testing site - A place selected by the employer where employees present themselves for the purpose of providing breath or saliva for an alcohol test.

Alcohol use - The drinking or swallowing of any beverage, liquid mixture or preparation (including any medication), containing alcohol.

Aliquot - A fractional part of a specimen used for testing. It is taken as a sample representing the whole specimen.

Blind sample or blind performance test specimen - A specimen submitted to a laboratory for quality control testing purposes, with a fictitious identifier, so that the laboratory cannot distinguish it from an employee specimen.

Breath Alcohol Technician (BAT) - A person who instructs and assists employees in the alcohol testing process and operates an evidential breath testing device.

Cancelled test - A drug or alcohol test that has a problem identified that cannot be or has not been corrected, or which Part 40 otherwise requires to be cancelled. A cancelled test is neither a positive nor a negative test.

Chain-of-custody (or Custody and Control Form (CCF)) - The procedure used to document the handling of the urine specimen from the time the employee gives the specimen to the collector until the specimen is destroyed. This procedure uses the Federal Drug Testing Custody and Control Form (CCF).

Collection Container - A container into which the employee urinates to provide the specimen for a drug test.

Collection Site - A place selected by the employer where employees present themselves for the purpose of providing a urine specimen for a drug test.

Collector - A person who instructs and assists employees at a collection site, who receives and makes an initial inspection of the specimen provided by those employees, and who initiates and completes the CCF.

Confirmatory drug test - A second analytical procedure performed on a different aliquot of the original specimen to identify and quantify the presence of a specific drug or drug metabolite.

Confirmation (or confirmatory) validity test - A second test performed on a different aliquot of the original urine specimen to further support a validity test result.

Confirmed drug test - A confirmation test result received by an MRO from a laboratory.

Consortium/Third-Party Administrator (C/TPA) - A service agent that provides or coordinates the provision of a variety of drug and alcohol testing services to employers. C/TPAs typically perform administrative tasks concerning the operation of the employers' drug and alcohol testing programs. This term includes, but is not limited to, groups of employers who join together to administer, as a single entity, the DOT drug and alcohol testing programs of its members. C/TPAs are not "employers" for purposes of Part 40.

Continuing education - Training for medical review officers (MROs) and substance abuse professionals (SAPs) who have completed qualification training and are performing MRO or SAP functions, designed to keep MROs and SAPs current on changes and developments in the DOT drug and alcohol testing program.

Covered function (or safety-sensitive function) - An operations, maintenance, or emergency-response function regulated by 49 CFR Part 192, 193, or 195 that is performed on a pipeline or on an LNG facility.

DOT Procedures (or Part 40) - The Procedures for Transportation Workplace Drug and Alcohol Testing Program published by the Office of the Secretary of Transportation in 49 CFR Part 40.

Designated employer representative (DER) - An employee authorized by the employer to take immediate action(s) to remove employees from safety-sensitive duties, or cause employees to be removed from these covered duties, and to make required decisions in the testing and evaluation processes. The DER also receives test results and other communications for the employer, consistent with the requirements of Part 40. Service agents cannot act as DERs.

Dilute specimen - A urine specimen with creatinine and specific gravity values that are lower than expected for human urine.

DOT, The Department, DOT agency - These terms encompass all DOT agencies, including, but not limited to, the Federal Aviation Administration (FAA), the Federal Railroad Administration (FRA), the Federal Motor Carrier Safety Administration (FMCSA), the Federal Transit Administration (FTA), the National Highway Traffic Safety Administration (NHTSA), the Pipeline and Hazardous Materials Safety Administration (PHMSA), and the Office of the Secretary (OST). These terms include any designee of a DOT agency.

Drugs - The drugs for which tests are required under Part 40 and DOT agency regulations are marijuana, cocaine, amphetamines, phencyclidine (PCP), and opiates.

Employee (covered employee) - Any person who is designated in a DOT agency regulation as subject to drug testing and/or alcohol testing. The term includes individuals currently performing safety-sensitive functions designated in DOT agency regulations and applicants for employment subject to pre-employment testing. For purposes of drug testing under Part 40, the term employee has the same meaning as the term "donor" as found on CCF and related guidance materials produced by the Department of Health and Human Services. For the purposes of regulation under Part 199, the term employee means a person who performs a covered function, including persons employed by operators, contractors engaged by operators, and persons employed by such contractors. This includes full-time, part-time and temporary employees. It also includes any applicant for a covered function.

Employer - A person or entity employing one or more employees (including an individual who is self-employed) subject to DOT agency regulations requiring compliance with Part 40. The term includes an employer's officers, representatives, and management personnel. Service agents are not employers for the purposes of Part 40.

Error Correction Training - Training provided to BATs, collectors, and screening test technicians (STTs) following an error that resulted in the cancellation of a drug or alcohol test. Error correction training must be provided in person or by a means that provides real-time observation and interaction between the instructor and trainee.

Evidential Breath Testing Device (EBT) - A device approved by NHTSA for the evidential testing of breath at the .02 and .04 alcohol concentrations, placed on NHTSA's Conforming Products List (CPL) for "Evidential Breath Measurement Devices" and identified on the CPL as conforming with the model specifications available from NHTSA's Traffic Safety Program.

HHS, Department of Health and Human Services - The Department of Health and Human Services or any designee of the Secretary, Department of Health and Human Services.

Initial drug test (also known as a "Screening drug test") - The test used to differentiate a negative specimen from one that requires further testing for drugs or drug metabolites.

Initial specimen validity test - The first test used to determine if a urine specimen is adulterated, diluted, substituted, or invalid.

Invalid drug test - The result reported by an HHS-certified laboratory in accordance with the criteria established by HHS Mandatory Guidelines when a positive, negative, adulterated, or substituted result cannot be established for a specific drug or specimen validity test.

Laboratory - Any U.S. laboratory certified by HHS under the National Laboratory Certification Program as meeting the minimum standards of Subpart C of the HHS Mandatory Guidelines for Federal Workplace Drug Testing Programs; or, in the case of foreign laboratories, a laboratory approved for participation by DOT under this part.

Limit of Detection (LOD) - The lowest concentration at which a measurand can be identified, but (for quantitative assays) the concentration cannot be accurately calculated.

Limit of Quantitation - For quantitative assays, the lowest concentration at which the identity and concentration of the measurand can be accurately established.

Medical Review Officer (MRO) - A person who is a licensed physician and who is responsible for receiving and reviewing laboratory results generated by an employer's drug testing program and evaluating medical explanations for certain drug test results.

Negative result - The result reported by an HHS-certified laboratory to an MRO when a specimen contains no drug or the concentration of the drug is less than the cutoff concentration for the drug or drug class and the specimen is a valid specimen.

Non-negative specimen - A urine specimen that is reported as adulterated, substituted, positive (for drug(s) or drug metabolite(s)), and/or invalid.

Office of Drug and Alcohol Policy and Compliance (ODAPC) - The office in the Office of the Secretary, DOT, that is responsible for coordinating drug and alcohol testing program matters within the Department and providing information concerning the implementation of Part 40.

Operator - A person who owns or operates pipeline facilities subject to 49 CFR Part 192, 193, or 195.

Oxidizing adulterant - A substance that acts alone or in combination with other substances to oxidize drugs or drug metabolites to prevent the detection of the drug or drug metabolites, or affects the reagents in either the initial or confirmatory drug test.

Performs a covered function - Actually performing, ready to perform, or immediately available to perform a covered function.

Pipeline - All parts of those physical facilities through which gas, hazardous liquids or carbon dioxide moves in transportation, including, but limited to, pipe, valves, and other appurtenance attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders, pumping units, breakout tanks and fabricated assemblies.

Pipeline facility - New and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas, or transportation of hazardous liquids or carbon dioxide during the course of transportation.

Positive rate for random drug testing - The number of verified positive results for random drug tests conducted under Part 199, plus the number of refusals of random drug tests required by Part 199, divided by the total number of random drug tests conducted plus the number of refusals of random tests under Part 199.

Positive result - The result reported by an HHS-certified laboratory when a specimen contains a drug or drug metabolite equal to or greater than the cutoff concentrations.

Primary specimen - In drug testing, the urine specimen bottle that is opened and tested by a first laboratory to determine whether the employee has a drug or drug metabolite in his or her system; and for the purpose of validity testing. The primary specimen is distinguished from the split specimen, defined in this section.

Prohibited drug - Any of the following substances specified in Schedule I or Schedule II of the Controlled Substances Act (21 U.S.C. 812): marijuana, cocaine, opiates, amphetamines, and phencyclidine (PCP).

Qualification Training - The training required in order for a collector, BAT, MRO, SAP, or STT to be qualified to perform their functions in the DOT drug and alcohol testing program. Qualification training may be provided by any appropriate means (e.g., classroom instruction, internet application, CD-ROM, video).

Reconfirmed - The result reported for a split specimen when the second laboratory is able to corroborate the original result reported for the primary specimen.

Rejected for testing - The result reported by an HHS-certified laboratory when no tests are performed for a specimen because of a fatal flaw or a correctable flaw that is not corrected.

Refresher Training - The training required periodically for qualified collectors, BATs, and STTs to review basic requirements and provide instruction concerning changes in technology (e.g., new testing methods that may be authorized) and amendments, interpretations, guidance, and issues concerning Part 40 and DOT agency drug and alcohol testing regulations (e.g., Part 199). Refresher training can be provided by any appropriate means (e.g., classroom instruction, internet application, CD-ROM, video).

Refusal to submit, refuse, or refuse to take - Behavior consistent with Part 40 concerning refusal to take a drug test or refusal to take an alcohol test.

Screening drug test - See Initial drug test definition above.

Screening Test Technician (STT) - A person who instructs and assists employees in the alcohol testing process and operates an ASD.

Secretary - The Secretary of Transportation or the Secretary's designee.

Service agent - Any person or entity, other than an employee of the employer, who provides services specified under Part 40 to employers and/or employees in connection with DOT drug and alcohol testing requirements. This includes, but is not limited to, collectors, BATs and STTs, laboratories, MROs, substance abuse professionals, and C/TPAs. To act as service agents, persons and organizations must meet the qualifications set forth in applicable sections of Part 40. Service agents are not employers for purposes of Parts 199 and 40.

Shipping container - A container that is used for transporting and protecting urine specimen bottles and associated documents from the collection site to the laboratory.

Specimen bottle - The bottle that, after being sealed and labeled according to the procedures in Part 40, is used to hold the urine specimen during transportation to the laboratory.

Split specimen - In drug testing, a part of the urine specimen that is sent to a first laboratory and retained unopened, and which is transported to a second laboratory in the event that the employee requests that it be tested following a verified positive test of the primary specimen or a verified adulterated or substituted test result.

Split specimen collection - A collection in which the urine collected is divided into two separate specimen bottles, the primary specimen (Bottle A) and the split specimen (Bottle B).

State agency - An agency of any of the several states, the District of Columbia, and the Commonwealth of Puerto Rico that participates under the pipeline safety laws (49 U.S.C. 60101 et seq.)

Stand-down - The practice of temporarily removing an employee from the performance of safety-sensitive functions based only on a report from a laboratory to the MRO of a confirmed positive test for a drug or drug metabolite, an adulterated test, or a substituted test, before the MRO has completed verification of the test result.

Substance Abuse Professional (SAP) - A person who evaluates employees who have violated a DOT drug and alcohol regulation and makes recommendations concerning education, treatment, follow-up testing, and aftercare.

Substituted specimen - A specimen with creatinine and specific gravity values that are so diminished or so divergent that they are not consistent with normal human urine.

Verified test - A drug test result or validity testing result from an HHS-certified laboratory that has undergone review and final determination by the MRO.

III. POLICY AND RESPONSIBILITIES

1. Company Policy

Policy Statement. The Company has a long-standing commitment to maintain the highest standards for employee safety and health. The use of controlled substances and the misuse of alcohol are contrary to these high standards. The use or possession of illegal controlled substances or alcoholic beverages while on Company property, or in any Company vehicle, or on Company time, including breaks or lunch, paid or unpaid, on any shift, is strictly prohibited.

DOT Compliance . The Company is aware that it is ultimately responsible for meeting the requirements of Parts 40 and 199. The DOT authorizes transportation employers to use a service agent(s) to perform tasks necessary to comply with the Plan. The Company understands that, under the DOT regulations, it is responsible for the actions of its service agents. The Company is responsible for developing and implementing a successful and comprehensive DOT workplace drug and alcohol program. Components of the Company's program include clear policies, provisions for education and training, drug and alcohol testing, and when needed, referral for evaluation, education, and treatment. The Company shall ensure that all covered employees are aware of the provisions and coverage of the Plan.

2. Responsibilities of Key Personnel

The Company will convey to responsible individuals -- the Designated Employer Representative(s) and affected supervisors - that, to the best of their ability, the privacy and confidentiality of any covered employee subject to the Plan must be maintained at all times.

Designated Employer Representative (DER) . Appendix B contains the name, address, and phone number of the DER(s). The DER is:

- a. the key employee for the Company's drug and alcohol program functions, and has the knowledge and authority to make decisions about the testing process and answer questions about it.
- b. **not** a service agent.
- c. one or more employees of the Company assigned to ensure adequate coverage on all shifts and at all locations.
- d. responsible for the preparation of the Plan, as well as providing oversight and evaluation on the Plan.
- e. responsible to review all adverse personnel action or discipline applied under the Plan for consistency and conformance to human resources policies and procedures.
- f. responsible for scheduling random, return-to-duty and follow-up testing, as applicable, and is authorized to receive and maintain, in a secure file system, all drug and alcohol testing results.

- g. responsible for providing answers to employee questions regarding the testing program, and information on the resources available for drug and alcohol counseling.
- h. responsible for overseeing the employee assistance program (EAP).

Supervisor. A Company individual(s) responsible for observing the performance and behavior of employees that is suggestive enough to lead to reasonable suspicion/cause drug and/or alcohol testing. Supervisors who will determine whether an employee must be drug tested and/or alcohol tested based on reasonable suspicion/cause will be trained in the “signs and symptoms” of each substance. The supervisor is required to document a reasonable suspicion/cause event. The supervisor may also be responsible for requests as the second supervisor for substantiation and concurrence for reasonable suspicion/cause drug test, if applicable.

3. Responsibility of Covered Employees⁴

Compliance. Each covered employee must comply with the requirements of the Plan, and the DOT drug and alcohol rules it pertains to, in order to remain eligible to work in a DOT safety-sensitive position. Each covered employee has the responsibility to read, be knowledgeable of, and comply with, the requirements of the Plan, and Parts 40 and 199. Committing a DOT violation will result in the employee’s immediate removal from the covered function, and remain so until successfully completing the DOT return-to-duty conditions of Part 40. The Plan describes circumstances for being tested, violations, prohibited conduct, and their subsequent consequences. The Plan describes what is available to each covered employee as services (e.g., EAP) in such cases where the employee has a potential problem with drugs or alcohol prior to a drug or alcohol test. It is a condition of employment for all covered employees to sign the Acknowledgement/Receipt Form (Appendix A). In doing so, the employee attests to comply with the drug and alcohol program requirements of the Company and the requirements of the Plan. Failure to comply with this condition may result in disciplinary action up to and including termination.

4. Use of Service Agents^{5 6}

Compliance. The Company will contract with service agents to accomplish many of the requirements of Parts 40 and 199. Appendix B (Designated Personnel and Service Agents) provides the names and addresses of service agents that are under contract. Contracts will contain a provision that the service agent will comply with Parts 40 and 199 in the services provided. The work of any service agent providing services to the Company will be open to inspection by the Company. The service agent must allow access to property and records by the operator, the Administrator, and if the operator is subject to the jurisdiction of a state agency, a representative of the state agency for the purpose of monitoring the operator's compliance with the requirements of Part 199. No service agent will serve as DER for this Company.

Public Interest Exclusion. The Company will not use a service agent against whom a Public Interest Exclusion (PIE) has been issued. The Company will stop using the services of a service agent no later than 90 days after the DOT has published the decision in the *Federal Register* or posted it on its web site that a PIE has been issued. The Company may apply to the ODAPC Director for an extension of 30 days if it is demonstrated that a substitute service agent cannot be found within 90 days.

Consortium/Third Party Administrator. The Company may employ the service of a Consortium/Third Party Administrator (C/TPA) to assist the DER with overall program management and consultation on any program issue. While the C/TPA will not serve as the DER, the C/TPA may support the DER by explaining the regulations and offering guidance on program-compliance issues.

5. Critical Service Agent Positions^{7 8}

Compliance. The Company recognizes the significance of critical service agent positions within the DOT drug and alcohol program. The Company understands the importance of each service agent meeting their initial qualifications, as applicable, and then maintaining compliance throughout the conduct of their program functions, all in accordance with Part 40 and Part 199 requirements. The Company will ensure that the following critical positions meet DOT rule requirements:

- a) Medical Review Officer (MRO) (§40.121 and §199.109(b));

- b) Substance Abuse Professional (SAP) (§40.281);
- c) Urine Specimen Collector (§40.33);
- d) Screening test Technician (§40.213); and,
- e) Breath Alcohol Technician (§40.213)

6. "Non-DOT" Testing Program^{9 10}

Compliance. The Company may implement an additional drug and/or alcohol testing program, referred to as a "non-DOT program." Any additional testing program would be completely independent of the DOT testing program. Such a testing program would be developed under the Company's own authority and kept separate from the DOT program. All DOT testing would be accomplished first; the Company's non-DOT program would commence afterwards. The non-DOT program would use different forms and not use the Federal Custody and Control Form or the DOT Alcohol Testing Form. The non-DOT program could test different people, for different drugs, and different reasons-for-testing. If the Company implements its own non-DOT testing program, the Company will define the program and notify all employees through a Non-DOT Program Plan.

IV. DOT PROGRAM REQUIREMENTS

1. Employees Subject to Testing^{11 12}

Compliance. Any employee who would perform an operations, maintenance, or emergency-response function, regulated by Part 192, 193, or 195, on a pipeline or LNG facility, is subject to mandatory DOT drug and alcohol testing under this program. Such individuals are subject to DOT testing because their job functions have been determined by PHMSA to be a covered, or safety-sensitive, transportation function. Appendix C (Covered Positions) provides specific employee titles, for this Company, of those subject to testing under this program. However, it is the work that an individual performs, not the title of their job, which determines whether their work is covered and therefore subject to drug and alcohol testing.

Operator or Contractor . Covered employees may be employed by the operator, be a contractor engaged by the operator, or be employed by such a contractor; this includes full-time, part-time and temporary employees and includes any applicant for a covered function.

2. Acknowledgement/Receipt Form

The "Acknowledgement/Receipt Form," (Appendix A), applies to all drug and/or alcohol tests, or related foregoing or subsequent DOT procedures, while the employee is in a covered function with the Company. The signed form will be maintained by the Company. For any test, the expectations placed on the employee by the Company are to "follow all instructions" in order to accomplish the test.

3. History-check Requirement^{13 14}

Compliance. Prior to the first time that the Company uses an employee to perform safety-sensitive duties (i.e., a new hire or an employee transferring into a safety-sensitive position) the Company will require a "history check" of the employee. The history check will look back into the employee's past two years of DOT employment for DOT violations. History checks are conducted only after obtaining the employee's written authorization to do so. Any employee refusing to provide written consent will not be permitted to perform safety-sensitive functions. The Company will not allow the covered employee to perform their functions after 30 days from the date on which the employee first performed safety-sensitive functions, unless the Company has obtained or made and documented a good faith effort to obtain alcohol and drug testing information from previous DOT-regulated employers.

Information request. The Company will request the following information about the employee.

- a) Alcohol tests with a result of 0.04 or higher alcohol concentration;
- b) Verified positive drug tests;
- c) Refusals to be tested (including verified adulterated or substituted drug test results);
- d) Other violations of DOT agency drug and alcohol testing regulations; and

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- e) With respect to any employee who violated a DOT drug and alcohol regulation, documentation of the employee's successful completion of DOT return-to-duty and follow-up testing requirements.

The Company will make at least one attempt by telephone, e-mail or fax, and maintain documentation associated with the attempt to obtain history-check information (e.g., date and time of the attempt, person contacted). If the Company finds evidence of past DOT violations, those violations may be used as the sole reason for not hiring the individual or for termination.

Violation Consequences . The Company will not use any employee in a DOT safety-sensitive position that has had a past DOT violation and has not complied with DOT eligibility standards for returning to safety-sensitive work. The Company will also ask the employee if they had any pre-employment test that was positive for which the previous employer did not hire them. The employee's answer to this question will be maintained as part of the employee's history-check information.

4. Employee Notification of Tests

Employees will be notified directly when a test must be conducted. While the circumstances for a test will differ by its reason-for-test, the Company will endeavor to conduct all tests with only a limited number of Company personnel having knowledge of the reason for the test.

All testing will be unannounced until the last possible moment. The timing will vary in conjunction with the reason-for-test. For example, a pre-employment test will be announced during the job application; a random test is announced within the test period, but just prior to the test, to maintain the element of surprise; and, announcements of post-accident or reasonable suspicion tests are controlled by the circumstances that come to light around the time of the event (e.g., accident). All alcohol test will be conducted just prior to, during, or just after the performance of safety-sensitive duties. Drug tests may be conducted anytime the employee is at work.

The DER and Company supervisors will be responsible for notifications and to help maintain the element of confidentiality. When an employee is notified for a test, the employee must proceed to the collection site immediately. Immediately means that after notification, all the employee's actions must lead to an immediate specimen collection (or test). The Company considers "travel time to the collection site, plus 30 minutes" as the maximum acceptable interval of time between notification and testing.

In test situations such as post-accident and reasonable suspicion/cause, where the employee's job performance is called into possible question, supervisors will use their discretion and training to minimize further confrontation. A reasonable attempt will be made by the supervisor to isolate and inform the employee of the decision to test, the steps that must be taken to accomplish the test, and the consequences of refusing the test. If possible, for post-accident and reasonable suspicion tests, the Company will have the DER or a supervisor accompany the employee to the collection site.

5. DOT Drug Violations

Drug Violations . The following provides a listing of DOT drug violations prohibited of covered employees:

- a) A verified positive drug test result;
- b) A refusal to be tested, determined by:
 - (1) Having a verified adulterated or substituted drug test result;
 - (2) Failing to appear for any drug test (except a pre-employment test) within a reasonable time, as determined by the Company, after being directed to do so by the Company;
 - (3) Failing to remain at the drug testing site until the testing process is complete;
 - (4) Failing to provide a urine specimen for any drug test;
 - (5) Failing to allow a directly observed or monitored collection in a drug test that requires such a collection procedure;

- (6) Failing to provide a sufficient amount of urine for a drug test when directed, and it has been determined, through a required medical evaluation, that there was no adequate medical explanation for the failure;
- (7) Failing or declining to take an additional drug test the Company or collector has directed the employee to take;
- (8) Failing to undergo a medical examination or evaluation, as directed by the MRO as part of the verification process, or as directed by the DER; or,
- (9) Failing to cooperate with any part of the testing process (e.g., refuse to empty pockets or failure to wash hands when so directed by the collector, behave in a confrontational way that disrupts the collection process, tampering with a specimen).
- (10) For an observed collection, fail to follow the observer's instructions to raise clothing above the waist, lower clothing and underpants, and to turn around to permit the observer to determine if there is any type of prosthetic or other device that could be used to interfere with the collection process.
- (11) Possess or wear a prosthetic or other device that could interfere with the collection process.
- (12) Admit to the collector or MRO that a specimen has been adulterated or substituted.

6. DOT Alcohol Violations and Prohibited Conduct^{15 16}

Alcohol Violations. The following provides a listing of DOT alcohol violations prohibited of covered employees:

- a) A test result of 0.04 or higher alcohol concentration;
- b) A refusal to be tested, determined by:
 - (1) Failing to appear for any alcohol test (except a pre-employment test) within a reasonable time, as determined by the Company, after being directed to do so by the Company;
 - (2) Failing to remain at the alcohol testing site until the testing process is complete;
 - (3) Failing to provide an adequate amount of saliva or breath for an alcohol test;
 - (4) Failing to provide a sufficient amount of breath for an alcohol test when directed, and it has been determined, through a required medical evaluation, that there was no adequate medical explanation for the failure;
 - (5) Failing to undergo a medical examination or evaluation, as directed by the DER;
 - (6) Failing to sign the certification statement on the Alcohol Testing Form; or,
 - (7) Failing to cooperate with any part of the testing process.
- c) On-duty use of alcohol while performing covered functions.
- d) Pre-duty use of alcohol within four (4) hours prior to performing covered functions, or if the employee is called to duty to respond to an emergency, within the time period after the employee has been notified to report for duty.
- e) Use of alcohol within eight (8) hours following an accident in which the performance of covered functions has not been discounted by the Company as a contributing factor to the accident, unless the employee has already been given a post-accident alcohol test.

Alcohol Prohibited Conduct. The following is prohibited conduct of DOT covered employees:

- a) A test result of 0.02 or greater alcohol concentration, but less than 0.04.

7. Violation Consequences and Company Actions^{16 17}

After DOT Rule Violations. The Company will not allow any covered employee who has a DOT drug or alcohol violation to perform safety-sensitive duties for the Company. Immediately upon learning of the violation, the DER shall assure the removal of the employee from all safety-sensitive duties. That employee will be ineligible to work in any DOT safety-sensitive function for the Company until the employee has successfully completed the DOT return-to-duty process. The Company will refer the

employee to a Substance Abuse Professional (SAP) as soon as practicable after the verified violation report.

After DOT Alcohol Prohibited Conduct. The Company will not allow any covered employee to perform, or continue to perform, any function covered by Part 199 when the employee is found to have an alcohol concentration of 0.02, or higher, but less than 0.04. The Company may continue testing the employee until the alcohol concentration is less than 0.02, or the Company may not use the employee in a safety-sensitive function until the start of the employee's next regularly scheduled shift, which must be not less than eight hours following the test that indicated "prohibited conduct."

V. ANTI-DRUG PROGRAM

1. DOT-Required Drug Tests

Compliance. The Company will ensure that each employee who performs a DOT-covered function will be drug tested for the following reasons when called for by Part 199: All drug tests will be conducted following the procedures of Part 40.

Pre-Employment.¹⁸ A pre-employment drug test will be conducted before an individual is hired or contracted into a covered position and when an individual is transferred or promoted from a non-covered to a covered position. This includes when an individual switches back and forth from a covered position to a non-covered position and back again. This also applies to employees returning from a leave of absence greater than 30 days who have not been participating in the Company's drug program and subsequently subject to the random selection process. A negative DOT urine drug test result is required prior to performing covered functions. DOT does not allow the use of a "quick test" (e.g., a urine test that produces an immediate test result) or any other methodology other than urine. Pre-employment tests are normally unobserved by the collector. However, provisions will be available at the collection site for a directly observed collection to take place should circumstances require such action.

Post-Accident Testing.¹⁹ The Company will conduct both a drug test and an alcohol test after an accident, or incident on each employee whose performance either contributed to the accident or cannot be completely discounted as a contributing factor to the accident. The decision whether to test or not to test any employee shall be based on the Company's determination, using the best available information immediately following the accident, that the covered employee's performance could or could not have contributed to the accident. The Company will explain to each employee to be tested there is reason to believe their performance either contributed to the accident or cannot be completely discounted as a contributing factor to the accident. The Company will document the decisions that support the determination to conduct a post-accident test. Refer to the *Post Accident or Reasonable Cause/Suspicion Supervisor Written Record*.

A post-accident drug test shall be conducted on each employee as soon as possible but no later than 32 hours after the accident. The Company must take all reasonable steps to obtain a urine specimen from an employee after an accident, but any injury should be treated first. Nothing in this section shall be construed to require the delay of necessary medical attention for injured people following an accident, to prohibit a covered employee from leaving the scene of an accident for the period necessary to obtain assistance in responding to the accident, or to obtain necessary emergency medical care.

The affected employee will not be allowed to proceed alone to or from the collection site. An employee who is subject to post-accident testing who fails to remain readily available for such testing, including notifying the Company or Company's representative of their location if they leave the scene of the accident prior to submission to such test, may be deemed by the Company to have refused to submit to testing. Post accident tests are normally unobserved by the collector. However, provisions will be available at the collection site for a directly observed collection to take place should circumstances require such action. Depending on the circumstances of the accident, and if feasible, the employee will not be allowed to perform covered functions pending the results of the drug test.

Random Drug Testing.^{20 21 22 23} The Company will conduct a number of random tests each calendar year that meets or exceeds the current minimum annual percentage random testing rate. The

minimum rate for random drug testing, set by the PHMSA regulation, is 25 percent of the Company's covered employees. If the industry random drug testing positive rate is above 1 percent, PHMSA will raise the annual percentage rate for random drug testing to 50 percent of the Company's covered employees. The Company may use the services of the C/TPA to manage all aspects of the Company's random testing program. If the Company conducts random testing through a C/TPA, the number of employees to be tested may be calculated for each individual Company or may be based on the total number of covered employees covered by the C/TPA who are subject to random testing (e.g., consortium random testing pool).

All covered employees will be immediately placed in the random pool after obtaining a negative result on their pre-employment test. Covered employees will remain in the random selection pool at all times, regardless of whether or not they have been previously selected for testing. The selection of employees shall be made by using a computer-based, scientifically valid method (e.g., random number generator or equivalent random selection method) that is matched with an employee's social security number or employee ID number. The DER will assure the pool contains employee social security numbers or employee identification numbers that are current, complete, and correct. Employees will have an equal chance of being selected for testing.

Random testing will occur on a quarterly basis. Prior to selection, the DER shall ensure that the random testing pool has been updated to include all current covered employees in the Company's workforce. The number of tests to be conducted will be based on the number of covered employees at the beginning of each quarter's test cycle. The DER, or C/TPA, shall use the random selection procedures to compile a list of covered employees selected for testing in each testing cycle. The number of employees selected shall be sufficient to assure that the minimum number of required tests can be achieved. The list of employees selected will be retained by the DER in a secure location until the time of testing when the list will then be provided to the appropriate division manager, department head, or supervisor who will, in turn, notify the employee(s) to report for testing.

Random testing is unannounced, with employees being notified that they have been selected for testing after they have reported for duty on the day of collection. Specimen collection will be conducted on different days of the week throughout each test cycle to prevent employees from matching their drug use patterns to the schedule for collection. Random tests are normally unobserved by the collector. However, provisions will be available at the collection site for a directly observed collection to take place should circumstances require such action.

Once notified by the appropriate Company official, employees will be instructed to report immediately to the collection site.

Reasonable Suspicion/Cause Testing.²⁴ The Company will conduct reasonable suspicion testing, also known as reasonable cause testing, based on the Company's observation of "signs and symptoms" of specific, contemporaneous, articulable observations concerning the appearance, behavior, speech, or body odors of the employee. At least two Company supervisors, one of whom is trained in detection of the possible signs and symptoms of drug use, shall substantiate and concur in the decision to test an employee. The concurrence between the two supervisors may be by telephone. If the Company has 50 or fewer employees subject to testing under PHMSA regulations, only one supervisor, trained in detecting possible drug use signs and symptoms, is needed to make the decision to test.

The supervisor making the determination to test shall document, in writing, the behavioral signs and symptoms that support the determination to conduct a reasonable suspicion/cause test. This documentation of the employee's conduct shall be prepared and signed within 24 hours of the observed behavior or before the results of the tests are released, whichever is earlier. Refer to the *Post Accident or Reasonable Cause/Suspicion Supervisor Written Record*. The potentially affected employee should not be allowed to proceed alone to or from the collection site. In addition to the safety concerns for the employee, accompanying the employee also assures that there is no opportunity in route to the collection site for the employee to compromise the test through any method of tampering that could affect the outcome of the test result. Reasonable suspicion/cause tests are normally unobserved by the collector. However, provisions will be available at the collection site for a directly observed collection to take place should circumstances require such action.

The employee shall not perform a covered function pending the receipt of the drug test results. The employee should make arrangements to be transported home. The employee should be instructed not to drive any motor vehicle due to the reasonable belief that the employee may be under the influence of a drug. If the employee insists on driving, a supervisor should notify the proper local law enforcement authority that an employee believed to be under the influence of a drug is leaving the Company premises driving a motor vehicle.

Return-to-Duty Testing.²⁵ The Company will conduct a return-to-duty test prior to an employee returning to safety-sensitive duty following a DOT violation. When an employee has a DOT violation the employee cannot work again in any DOT safety-sensitive function until successfully completing the Substance Abuse Professional (SAP) return-to-duty requirements. Only after the SAP has reported to the Company that the employee is eligible to return to safety-sensitive duties is the Company authorized to return the employee to a covered function. However, whether or not to do so is a business decision of the Company, not the DOT. When the Company makes the decision to return the employee to safety-sensitive duty, the Company will initiate the order for the return-to-duty test. All return-to-duty tests will be conducted using direct-observation collection procedures.

A return-to-duty test, as a minimum, will be for the substance associated with the violation. A return-to-duty test may, however, be for both drugs and alcohol. The decision belongs solely to the SAP from information gained during the SAP-evaluation/treatment processes. The results of a return-to-duty drug test must be negative in order "to count" and allow the employee to return to work. A cancelled test must be recollected; a positive test or refusal-to-test will be considered as a new, separate violation. When the employee "passes" his return-to-duty test, their name is immediately placed into the Company's random testing pool.

Follow-up Testing.^{26 27} The Company will conduct follow-up testing, as a series of tests that occur after an employee returns to safety-sensitive work, following a negative result on the return-to-duty drug and/or alcohol tests. Follow-up testing, as a minimum, will be for the substance associated with the violation. In addition, follow-up testing may be for both drugs and alcohol, as directed by the SAP's written follow-up testing plan.

Follow-up testing is the Company's responsibility to conduct. Follow-up testing will run concurrently with random testing. All follow-up tests will be conducted using direct-observation collection procedures.

The number and frequency of the follow-up tests will be determined by the SAP, but shall consist of at least six tests in the first 12 months following the covered employee's return to duty. The follow-up plan will give both the number of tests and their frequency; the Company will select the actual day and time of the test and the tests are unannounced. Follow-up testing shall not exceed 60 months from the date of the covered employee's return to duty. The SAP may terminate the requirement for follow-up testing at any time after the first six tests have been administered, if the SAP determines that such testing is no longer necessary.

2. Drug Tests That Require Direct Observation Procedures²⁸

Compliance. The Company will conduct all return-to-duty and follow-up drug tests using the direct observation collection procedures specified by Part 40. Pre-employment, post-accident, reasonable suspicion/cause and random drug tests are normally conducted by giving the employee the privilege of privacy when providing the urine specimen. However, should it become required that these collections be conducted under direct observation procedures, the Company will convey instructions to the collector to ensure that this is done. Direct observation procedures will also be used for collections when a specimen is provided and the temperature is out of range, when the specimen appears to have been tampered with or when a previous specimen has been reported as invalid, adulterated, substituted or negative-dilute with a creatinine concentration greater than or equal to 2 mg/dL but less than or equal to 5 mg/dL, as defined in Part 40.

3. Specimen Collection Procedures

Compliance. The Company will follow the requirements of Part 40 for its DOT collections. A full description of DOT collection requirements that collectors will follow can be found in Part 40, Subpart C (“Urine Collection Personnel”), Subpart D (“Collection Sites, Forms, Equipment and Supplies Used in a DOT Urine Collection”), and Subpart E (“Urine Specimen Collections”).

Collection Site Personnel .^{29 30} The Company will ensure that collection sites, utilized by its employees, are aware of their responsibilities with regard to the DOT specimen collection process. These responsibilities are to collect urine specimens using Part 40 procedures, ship the specimens to a Department of Health and Human Services (HHS) certified laboratory for analysis, and distribute copies of the Federal Drug Testing Custody and Control Form (CCF) to the laboratory, Medical Review Officer, employer or employer’s C/TPA, and employee in a confidential manner. All attempts are made to use collectors who have been trained in accordance with Part 40. The Company, or the Company’s C/TPA, will ask the collection sites conducting DOT collections to attest to the fact that they comply with DOT standards of practice. The direct supervisor of a covered employee shall not serve as a collector in conducting any required drug test unless it is otherwise impracticable.

Collection Site, Forms, and Specimen. The Company will provide the employee with the specific location of the collection site where the drug test will take place. In most cases, the Company will provide the employee with a drug testing kit, which includes the CCF, to present to the collector. The only specimen that will be collected for any DOT collection is urine; the only form that will be used is the Federal CCF.

Collections. The Company will inform every employee that they are required to carry and present a current valid photo ID, such as a driver’s license, passport, or employer-issued picture ID to the collection site. The employee will be advised that the collector will ask them to empty their pockets, remove any unnecessary garments (the employee may retain their wallet), and wash and dry their hands prior to the collection. The employee will be instructed to follow the collector’s instructions throughout the collection process. Normally, the employee will be afforded privacy to provide a urine specimen. Exceptions to the rule generally surround issues of attempted adulteration or substitution of a specimen or any situation where questions of specimen validity arise, like an unusual specimen temperature.

After the employee has provided the specimen (a minimum of 45 mL) of their urine into a collection container, the collector will check the temperature and color of the urine. All DOT collections are “split specimen collections.” The collector will pour the urine into two separate bottles (bottle “A” as the primary specimen and bottle “B” as split specimen), seal them with tamper-evident tape, and then ask the employee to initial the seals after they have been placed on the bottles. (Remember: Neither the employee nor the collector should let the specimen out of their sight until it has been poured into two separate bottles and sealed.) Next, the employee will write their name, date of birth, and daytime and evening phone numbers on the MRO Copy (Copy 2) of the CCF. This is so the MRO can contact the employee directly if any questions arise about their test.

Lastly, the collector will complete the necessary documentation on Copy 1 of the CCF and package the CCF and the two specimen bottles in the plastic bag and seal the bag for shipment to the laboratory. Copies of the CCF will be distributed: Copy 2 to the MRO and Copy 4 to the employer or the employer’s C/TPA; the collector keeps Copy 3; and, the employee gets Copy 5. The employee may list any prescription and over-the-counter medications they may be taking on the back of their copy of the CCF (this may serve as a reminder for the employee in the event the MRO calls to discuss their test results).

Possible collection issues. If the employee is unable to provide 45 mL of urine on the first attempt, the time will be noted, and they will be required to remain in the testing area under the supervision of the collection site personnel, their supervisor, or a representative from their Company (e.g., supervisor accompanying the employee). Leaving the testing area without authorization may be considered a refusal to test. The employee will be urged to drink up to 40 oz. of fluid, distributed reasonably over a period of up to three hours, and asked to provide a new specimen (into a new collection container). If the DER is contacted, the DER should instruct the employee to remain at the collection site to complete the collection process. If the employee does not provide a sufficient

specimen within three hours, the DER, in consultation with the MRO, will direct the employee to obtain a medical evaluation within five days to determine if there is an acceptable medical reason for not being able to provide a specimen. If it is determined that there is no acceptable physiological or pre-existing psychological reason for not providing a urine specimen, it will be considered a refusal to test.

Directly observed collections . If a direct observation collection is required of the employee, the Company will ensure that the DOT requirements (i.e., direct observation by same-sex collector, observation of body-to-bottle urination, and use of full turn-around observation) procedures are followed.

4. PHMSA Inspection Protocol for Specimen Collection Sites

Compliance. PHMSA's Substance Abuse Program: Comprehensive Audit and Inspection Protocol Form, Combined Anti-Drug and Alcohol Misuse Prevention Programs, Form No.: 3.1.11, dated January 29, 2010, provides a separate inspection protocol for Specimen Collection Sites. The Company provides this protocol to correspond with the detail found in the PHMSA Inspection Form. As previously stated, the Company will ensure that all DOT drug tests comply with Part 40 requirements.

Collection Personnel. The Company will ensure that only qualified collectors are used to conduct Company DOT tests. An immediate supervisor of an employee may be used in cases where there are no qualified collectors available, and where their use is the only way to get the test conducted. Collectors will maintain documentation to verify they meet training requirements and will make that documentation available to the Company on request.³¹ If an error occurs causing a test to be canceled and the error is directly attributed to the collector, the collector will undergo error-correction training within 30 days of the date of notification of the error that led to the need for training.³²

Collection Sites, Forms and Supplies. The Company will use designated collection sites that meet DOT requirements.³³ If the collection site uses a facility normally used for other purposes, the collector will ensure that it meets DOT standards before continuing the collection.³⁴ Access to collection materials and specimens will be restricted, and the facility will be secured against access during the procedure to ensure privacy to the employee and prevent distraction of the collector. Limited-access signs will be posted as necessary. The collector will maintain personal control over each specimen and CCF throughout the collection process and will prevent unauthorized personnel from entering any part of the site in which urine specimens are collected or stored.³⁵ The current CCF and a collection kit, that meets the requirements of Appendix A to Part 40, will be used for DOT collections.^{36 37}

Specimen Collections. Collectors will explain the basic collection procedure to the employee, including showing the employee the instructions on the back of the CCF.³⁸ In most all collections, the Company will provide the employee with a kit and CCF to carry to the collection site. In other collections, collectors will provide the employee with an individually wrapped or sealed collection container from the collection kit materials.³⁹ Precautions will be taken to ensure that unadulterated specimens are obtained and correctly identified. Specimen integrity will be maintained by: bluing agents being added in the toilet tank and all water sources secured; positive photo identification of the employee for collection; notification of the DER if employee fails to arrive at the assigned time; having the employee remove any unnecessary outer garments (purses or briefcases will remain with outer garments); having employees wash and dry their hands; and, to the greatest extent possible, the collector will keep an employee's collection container within view of both the collector and the employee between the time the employee has urinated and the specimen is sealed. Any unusual behavior will be noted on the CCF.⁴⁰

Following the collection, the specimen will be checked for sufficient volume (i.e., 45 mL), acceptable temperature range (i.e., between 90-100 degrees F), and shows no signs of tampering (e.g., color, odor).⁴¹ Having problematic issues with specimen volume, the collector will follow DOT's "shy bladder" procedures⁴²; problems with temperature or tampering will result in the collector conducting a second collection under direct observation (see Section V.2, "Drug Tests That Require Direct Observation Procedures").⁴³ Direct observation procedures will be used for all collections where the reason-for-test is either return-to-duty or follow-up. Direct observation procedures will also be used for collections when a specimen is provided and the temperature is out of range, when the specimen

appears to have been tampered with or when a previous specimen has been reported as invalid, adulterated, substituted or negative-dilute with a creatinine concentration greater than or equal to 2 mg/dL but less than or equal to 5 mg/dL, as defined in Part 40. If the collector does a monitored collection, same gender monitors will be used if the monitors are non-medical personnel.⁴⁴ All collections are completed by the specimens being sealed and labeled, the CCF being properly executed, and the specimens and the CCF being sealed in a plastic bag for shipment to the laboratory.⁴⁵

5. Drug Testing Laboratory

Compliance. The Company will employ a laboratory that will follow the requirements of Part 40 for the Company's DOT drug tests. A full explanation of DOT drug testing requirements that the laboratory will follow is found in Part 40, Subpart F ("Drug Testing Laboratories").

Laboratory.^{46 47} The Company shall ensure that all DOT testing is conducted only by a laboratory that is certified by the Department of Health and Human Services (HHS) under the National Laboratory Certification Program (NLCP). Doing so ensures that the Company complies with the requirements of Part 40 and with all applicable requirements of HHS in testing DOT specimens, whether or not those requirements are explicitly stated in the Plan. The laboratory used by this Company is specified in Appendix B. The laboratory will report the certified results to the MRO and only to the MRO, at the address provided on the Federal CCF. Results will not be reported directly to the Company or to or through another service agent, such as the C/TPA.

Specimen. Urine is the only specimen that is authorized for DOT drug testing. The Company will not use any other specimen (e.g., hair or saliva) for a DOT-required drug test. A "quick test" (e.g., a urine test that produces an immediate test result) is also prohibited by DOT.

Drug Testing.⁴⁸ The laboratory will ensure that, on each DOT test, each specimen is tested for **marijuana, cocaine, amphetamines, opiates, and phencyclidine (PCP)**. (See Table 1, pg 23) The testing is a "two step" process: all presumptive positive results on the initial test must be confirmed by a confirmation test. The initial and the confirmation tests use different chemical principles, and separate portions of the original specimen, for testing. DOT specimens will not be tested for any other drugs. DOT specimens will not be subjected to DNA testing.

Validity Testing. The laboratory will ensure that, on each DOT test, each specimen is also subjected to "validity testing." The purpose of validity testing is to determine if the employee tampered with their specimen during the collection process. Validity testing measures the creatinine concentration and specific gravity to detect a diluted or substituted specimen; pH is measured as one criterion established to detect an adulterated specimen. Validity testing also incorporates HHS criteria (used by DOT) in testing for specific adulterants such as nitrites, chromates, surfactants, and other active chemical compounds.

Laboratory specimen handling and reporting. When the laboratory receives a DOT specimen they will unpack and enter it into the testing process. Part of that process is to examine the condition of the specimen bottles and accompanying CCF. The laboratory will look closely for any specific reason to stop the testing process (i.e., "fatal flaws"). If the laboratory determines a fatal flaw exists, the specimen is rejected for testing. If a fatal flaw does not exist, the specimen will be tested. DOT specimens are limited to four fatal flaws. They are:

- a) Specimen ID numbers on the CCF and the bottles do not match.
- b) Not enough urine and the bottles cannot be re-designated.
- c) Signs of tampering and the bottles cannot be re-designated.
- d) Collector's printed name and signature are missing.

The laboratory will open only the primary specimen (Bottle "A") to conduct the two tests (initial and confirmatory). If the specimen tests negative in either test and does not have any specimen validity issues, the result will be reported to the MRO as a negative. Only if the specimen test results are positive, adulterated, substituted, and/or invalid under both tests will the specimen be reported to the MRO as a positive, adulterated, substituted, and/or invalid, respectively. These results are also referred to as "non-negative" results.

Required DOT Drug Tests & Cutoffs

TYPE OF DRUG Initial Test Analyte	INITIAL TEST Cutoff Concentration	CONFIRMATORY TEST Analyte	CONFIRMATORY TEST Cutoff Concentration
Marijuana metabolites	50 ng/mL	THCA ⁹	15 ng/mL
Cocaine metabolites	150 ng/mL	Benzoyllecgonine	100 ng/mL
Opiate metabolites: Codeine/Morphine	2000 ng/mL	Codeine Morphine	2000 ng/mL 2000 ng/mL
6-acetylmorphine (6-AM)	10 ng/mL	6-acetylmorphine (6-AM)	10 ng/mL
Phencyclidine (PCP)	25 ng/mL	Phencyclidine	25 ng/mL
Amphetamines: AMP/MAMP	500 ng/mL	Amphetamine Methamphetamine	250 ng/mL 250 ng/mL ¹³
MDMA	500 ng/mL	MDMA ¹⁰ MDA ¹¹ MDEA ¹²	250 ng/mL 250 ng/ml 250 ng/mL

Table 1

⁹ Delta-9-tetrahydrocannabinol-9-carboxylic acid.

¹⁰ Methylenedioxymethamphetamine (MDMA).

¹¹ Methylenedioxyamphetamine (MDA).

¹² Methylenedioxyethylamphetamine (MDEA).

¹³ Specimen must also contain amphetamine at a concentration of greater than or equal to 100 ng/mL.

6. Laboratory Retention Periods and Reports

Specimen retention.⁴⁹ Specimens that are confirmed by the laboratory to be positive, adulterated, substituted, or invalid will be retained by the laboratory in properly secured, long-term, frozen storage for at least 365 days. Within this 365 day period, the MRO, the employee, the Company, PHMSA or other state agencies with jurisdiction, may request in writing that the specimens be retained for an additional period. If the laboratory does not receive the request to retain the specimen within the 365-day period, the specimen will be discarded.

Record retention.⁵⁰ All laboratory records pertaining to any test for this Company on its covered employees will be retained for two years. The employer-specific data that is created by the laboratory for the laboratory statistical summary will be retained for two years.

Semi-annual reports.⁵¹ The laboratory will prepare and send to the Company the aggregate employer-specific summary on a semi-annual basis. The format for this report is found in Part 40, Appendix B.

7. Laboratory Quality Control

Inspections. The laboratory shall permit inspections by the Company, the PHMSA Administrator, or if the Company is subject to the jurisdiction of a state agency, a representative of the state agency. Additionally, if the Company uses a C/TPA, that C/TPA may conduct a periodic inspection of the laboratory on the behalf of the companies that are clients of the C/TPA.

Quality control.⁵² If the Company, or any C/TPA employed by the Company, has 2000 or more covered employees, the Company, or C/TPA, will submit quality control specimens to any laboratory where they have more than 100 specimens tested each year. The rate of quality control specimens is 1% with a cap at 50 per quarter. At any time that the Company, or any C/TPA employed by the Company, reaches the 2000-employee threshold, quality control specimen will be submitted following the specifications of Part 40. Quality control specimens, known as “blind” specimens, submitted to the laboratory, will appear to be real, employee specimens. The MRO will be informed of each test result and expected outcome.

Reporting discrepancies. The MRO will inform the Company or its C/TPA of any discrepancy in the expected result of any blind specimen. The MRO and C/TPA will resolve any discrepancies in the expected outcomes with this testing. If the unexpected outcome is positive, adulterated, or substituted where the expected outcome was to be negative, the MRO will report this result directly to DOT/ODAPC, in accordance with Part 40.

8. MRO Review of Drug Test Results

Compliance.⁵³ The Company will have, on staff or contract for the services of, an MRO who is a licensed physician with knowledge of drug abuse and is qualified under Part 40. The MRO will follow the requirements of Part 40 in carrying out the functions of the “independent and impartial gatekeeper of the drug testing process.” A full description of DOT MRO requirements can be found in Part 40, Subpart G (“Medical Review Officers and the Verification Process”), and Subpart H (Split Specimen Testing).

Duties.⁵⁴ All confirmed drug test results for the Company are received by the MRO directly from the laboratory. The MRO is responsible for the review of both negative and non-negative test results, review of the CCFs associated with each test, and to conduct quality control reviews of the MRO staff. The MRO will review and interpret confirmed positive, adulterated, substituted, and invalid test results. In carrying out this responsibility, the MRO shall examine alternate medical explanations for any positive, adulterated, substituted, or invalid test result. This action would include conducting a medical interview with the employee and review of the employee's medical history, or review of any other relevant biomedical factors, such as the results of a physical examination following an opiate positive. The MRO shall review medical records made available by the tested employee when the source of the confirmed result could have been from legally prescribed medication. The MRO shall

not, however, consider the results of urine or other specimens that are not obtained or processed in accordance with DOT regulations.

Results.^{55 56} The MRO will use staff under his direct supervision to handle administrative processes for negative test results including receiving the result from the laboratory, reviewing the paperwork for accuracy, and reporting of the result to the DER.

The MRO staff may make the initial contact with employees having confirmed positive, adulterated, substituted, and invalid test results, for the purposes of setting up an interview for the MRO. The MRO will personally conduct the interview with the employee to determine whether there is a legitimate medical explanation for these results. This interview will be conducted, in most cases, before the Company is notified. If the result is confirmed positive by the laboratory, and a legitimate medical explanation is established, the MRO will report the result to the DER as negative. If not, the MRO will report the result to the DER as positive. If the confirmed result is adulterated or substituted, and a legitimate medical explanation is established, the MRO will report the result to the DER as cancelled and notify ODAPC, in accordance with Part 40 procedures. If not, the MRO will report the result to the DER as a refusal to test. If the result is invalid, and an acceptable reason is established, the MRO will report the result to the DER as cancelled and the process will stop, unless a negative test result is needed (e.g., pre-employment, return-to-duty and follow-up). If an acceptable reason is not established, the MRO will report the result to the DER as cancelled and order an immediate recollection under direct observation.

Reports.⁵⁷ All drug test results will be reported to the Company DER in a confidential and timely manner. Before reporting any results, the MRO will have received a copy of the CCF showing where the employee has signed the form. The time period from collecting the specimen to reporting the verified test result is generally shorter for negatives than for non-negatives. Non-negatives will not be reported to the DER until all information required for the employee interview is received and approved by the MRO. The Company may use a C/TPA as its intermediary in receiving drug test results. If so, those reports will be handled in accordance with Part 40 requirements. If the MRO does not use Copy 2 of the CCF for reporting results, the MRO will maintain a copy of the signed or stamped report in addition to the signed or stamped and dated Copy 2. If the MRO uses an electronic data file to report negatives, the MRO will maintain a retrievable copy of that report in a format suitable for inspection and auditing by a DOT representative.

9. Split Specimen Testing

Split Specimen.⁵⁸ When the MRO has verified a result as positive, adulterated, or substituted, the MRO will notify the employee of their right to have the split specimen tested. The employee must notify the MRO within 72 hours of the result being verified in order to have this testing conducted. If the employee requests that the split specimen be tested within the 72-hour period, the MRO will ensure that the split specimen is tested. Testing of the split specimen is only conducted at the request of the employee, and then only after using the MRO as the requesting agent for the employee.

The Company is responsible for making sure that the MRO, first laboratory, and second laboratory perform the functions noted in Part 40 in a timely manner, once the employee has made a timely request for a test of the split specimen (e.g., by establishing appropriate accounts with laboratories for testing split specimens).

The Company must not condition compliance with these requirements on the employee's direct payment to the MRO or laboratory or the employee's agreement for reimbursement of the costs of testing. For example, if the Company's asks the employee to pay for some or all of the cost of testing the split specimen, and the employee is unwilling or unable to do so, the Company must ensure that the test takes place in a timely manner, which means that the Company will pay for the split testing. The Company may seek payment or reimbursement of all or part of the cost of the split specimen from the employee. Part 40 takes no position on who ultimately pays the cost of the test, so long as the Company ensures that the testing is conducted as required and the results released appropriately.

Laboratory.⁵⁹ The testing of the split specimen will be conducted at another HHS-certified laboratory, different from the original laboratory. The Company will select the second laboratory. The split specimen will be tested for the same substance or condition that was found in the primary

specimen. The MRO will report back to the DER and the employee whether the split reconfirms the primary. If the test of the split does not reconfirm the primary, both tests will be cancelled as if they never occurred.

10. Medical Marijuana

The DOT and the Company does not accommodate the use of medical marijuana by DOT-covered employees.

VI. ALCOHOL MISUSE PREVENTION PROGRAM

1. DOT-Required Alcohol Tests

Compliance. The Company will ensure that each employee who performs a DOT-covered function will be alcohol tested for the following reasons when called for by Part 199. All alcohol tests will be conducted following the procedures of Part 40.

Pre-Employment.⁶⁰ PHMSA does not mandate a pre-employment alcohol test for covered employees in the pipeline industry. PHMSA does give operators and contractors who wish to conduct a pre-employment alcohol test the authority to do so. If the Company decides to conduct pre-employment alcohol testing, all applicants will be advised of the test prior to the test occurring, and all tests will be conducted before the first performance of covered functions by every covered employee (whether a new employee or someone who has transferred to a position involving the performance of covered functions). The Company will treat all covered employees the same for the purpose of pre-employment alcohol testing; the Company will not test some covered employees and not others. The Company will conduct the pre-employment tests after making a contingent offer of employment or transfer, subject to the employee passing the pre-employment alcohol test. A result of less than 0.02 alcohol concentration is required prior to performing covered functions.

Post-Accident Testing.⁶¹ The Company will conduct both a drug test and an alcohol test, after an accident, or incident, on each employee whose performance either contributed to the accident or cannot be completely discounted as a contributing factor to the accident. The decision whether to test or not to test any employee shall be based on the Company's determination, using the best available information immediately following the accident, that the covered employee's performance could or could not have contributed to the accident. The Company will explain to each employee to be tested there is reason to believe their performance contributed to the accident or cannot be completely discounted as a contributing factor to the accident. The Company will document the decisions that support the determination to conduct a post-accident test. Refer to the *Post Accident or Reasonable Cause/Suspicion Supervisor Written Record*.

A post-accident alcohol test shall be conducted on each employee as soon as possible but no later than 8 hours after the accident. If the test is not completed within 2 hours the Company will prepare and maintain a written statement documenting the reason the test was not conducted. If the test is not completed within 8 hours the Company shall cease attempts to do so. The Company will take all reasonable steps to obtain a breath test from an employee after an accident, but any injury should be treated first. Nothing in this section shall be construed to require the delay of necessary medical attention for injured people following an accident, to prohibit a covered employee from leaving the scene of an accident for the period necessary to obtain assistance in responding to the accident, or to obtain necessary emergency medical care.

The affected employee will not be allowed to proceed alone to the testing site. A covered employee who is subject to post-accident testing who fails to remain readily available for such testing, including notifying the Company or Company's representative of their location if they leave the scene of the accident prior to submission to such test, may be deemed by the Company to have refused to submit to testing.

Random Testing. PHMSA does not authorize random alcohol testing of covered employees within the natural gas and hazardous liquids pipeline industry. The Company will not conduct DOT random alcohol testing of their PHMSA-regulated employees.

Reasonable Suspicion/Cause Testing .^{62 63 64} The Company will conduct reasonable suspicion testing, also known as reasonable cause testing, based on the Company's observation of "signs and symptoms" of specific, contemporaneous, articulable observations concerning the appearance, behavior, speech, or body odors of the employee. A supervisor trained in detection of the possible signs and symptoms of alcohol use shall make the decision to test an employee. The decision to test will only be made on an employee during, just before, or just after his performance of DOT functions. The supervisor making the determination to test shall document, in writing, the behavioral signs and symptoms that support the determination to conduct a reasonable suspicion/cause test. This documentation of the employee's conduct should be prepared and signed within 24 hours of the observed behavior or before the results of the tests are released, whichever is earlier. Refer to the *Post Accident or Reasonable Cause/Suspicion Supervisor Written Record*. The potentially affected employee should not be allowed to proceed alone to or from the test site.

If the reasonable suspicion test is not administered within 2 hours following the determination, the Company will prepare and maintain on file a record stating the reasons the test was not promptly administered. If a test is not administered within 8 hours, the Company will cease attempts to administer an alcohol test and record the reasons for not testing.

If the test results are 0.02 or greater, the employee should make arrangements to be transported home. The employee should be instructed not to drive any motor vehicle due to the reasonable belief that he may be under the influence of alcohol. If the employee insists on driving, a supervisor should notify the proper local law enforcement authority that an employee believed to be under the influence of alcohol is leaving the Company premises driving a motor vehicle.

Return-to-Duty Testing .⁶⁵ The Company will conduct a return-to-duty test prior to an employee returning to safety-sensitive duty following a DOT violation. When an employee has a DOT violation the employee cannot work again in any DOT safety-sensitive function until successfully completing the SAP/return-to-duty requirements. Only after the SAP has reported to the Company that the employee is eligible to return to safety-sensitive duties is the Company authorized to return the employee to a covered function. However, whether or not to do so is a business decision of the Company, not the DOT. When the Company makes the decision to return the employee to safety-sensitive duty, the Company will initiate the order for the return-to-duty test.

A return-to-duty test, as a minimum, will be for the substance associated with the violation. A return-to-duty test may, however, be for both drugs and alcohol. The decision belongs solely to the SAP from information gained during the SAP-evaluation/treatment processes. The results of a return-to-duty alcohol test must be less than 0.02 in order "to count" and allow the employee to return to work. A cancelled test does not meet this criterion and requires a retest; a result greater than 0.02 but less than 0.04 must be retested until the result is less than 0.02; a result of 0.04 or greater is a new, separate violation.

Follow-up Testing .^{66 67} The Company will conduct follow-up testing, as a series of tests that occur after an employee returns to safety-sensitive work, following a negative result on the return-to-duty drug and/or alcohol tests. Follow-up testing, as a minimum, will be for the substance associated with the violation. In addition, follow-up testing may be for both drugs and alcohol, as directed by the SAP's written follow-up testing plan.

Follow-up testing is the Company's responsibility to conduct. The number and frequency of the follow-up tests will be determined by the SAP, but shall consist of at least six tests in the first 12 months following the covered employee's return to duty. The follow-up plan will give both the number of tests and their frequency; the Company will select the actual day and time of the test and the tests are unannounced. Follow-up testing shall not exceed 60 months from the date of the covered employee's return to duty. The SAP may terminate the requirement for follow-up testing at any time after the first six tests have been administered, if the SAP determines that such testing is no longer necessary.

2. Alcohol Test

Compliance. The Company will follow Part 40 procedures for alcohol testing. A full description of DOT alcohol testing requirements can be found in Part 40, Subpart J ("Alcohol Testing Personnel");

Subpart K (“Testing Sites, Forms, Equipment and Supplies Used in Alcohol Testing”); Subpart L (“Alcohol Screening Tests”); Subpart M (“Alcohol Confirmation Tests”); and, Subpart N (“Problems in Alcohol Testing”). These procedures apply to all DOT alcohol tests regardless of the reason for the test.

Personnel and Testing Devices.^{68 69} The Company will only use qualified Screening Test Technicians (STT) or Breath Alcohol Technicians (BAT) for DOT alcohol tests. These technicians will only conduct the test using DOT-approved devices. Devices are approved by the National Highway Traffic Safety Administration (NHTSA), an agency of DOT, and placed on the Conforming Products List (CPL).¹⁴ The devices used by the Company will be maintained according to the particular manufacturer’s specifications in the Quality Assurance Plan (QAP). External calibration checks will be performed at the intervals specified in the manufacturer’s instructions for any EBT used for DOT-required alcohol confirmation testing.

Testing Site, Forms, and Specimen. The Company will provide the employee with the specific location where the test will take place. Tests will be conducted in an area to prevent unauthorized people from hearing or seeing the employee’s test result. The Company will remind the employee that failure to sign the DOT Alcohol Testing Form (ATF) at the instruction of the testing technician will be viewed as a refusal to test. The alcohol screening test may be conducted with breath or saliva, as applicable for the device used by the testing technician. Only breath will be used for the confirmation test, which is conducted by a BAT using an EBT.

Test. The Company will inform the employee that they are required to carry and present a current valid picture ID, such as a driver’s license, passport, or employer-issued picture ID to the testing site. The testing technician will perform a screening test and show the employee the test result. If the screening test result is an alcohol concentration of less than 0.02, no further testing is authorized, and there is no DOT action to be taken. The technician will document the result on the ATF, provide the employee a copy and also provide the Company and/or the Company’s C/TPA a copy. If the screening test result is 0.02 or greater, the employee will be required to take a confirmation test, which can only be administered by a BAT using an EBT. The BAT will wait at least 15-minutes, but not more than 30 minutes, before conducting the confirmation test. During that time, the employee will not be allowed to eat, drink, smoke, belch, put anything in their mouth or leave the testing area. Leaving the testing area without authorization may be considered a refusal to test. The BAT will perform an “air blank” (which must read 0.00) on the EBT device to ensure that there is no residual alcohol in the EBT or in the air around it. The confirmation test result is the final result of the test, and the will be shown to the employee and on the printout from the EBT. If the result is less than 0.02, no action is taken under Part 199. Any result of 0.02 or greater will be immediately reported to the Company.

3. PHMSA Inspection Protocol for Alcohol Testing Sites

Compliance. PHMSA’s Substance Abuse Program: Comprehensive Audit and Inspection Protocol Form, Combined Anti-Drug and Alcohol Misuse Prevention Programs, Form No.: 3.1.11, dated January 29, 2010, provides a separate inspection protocol for Alcohol Testing Sites. The Company provides this protocol to correspond with the detail found in the PHMSA Inspection Form. As previously stated, the Company will ensure that all DOT alcohol tests comply with Part 40 requirements.

Alcohol Testing Personnel. The Company will ensure that only qualified STTs and BATs are used to conduct Company DOT tests. STTs and BATs are responsible to maintain their own verification documentation and will make it available to the Company on request.⁷⁰ A supervisor of an employee may not be used to conduct a reasonable suspicion/cause test if that supervisor was the one who made the determination to test.⁷¹

¹⁴ National Highway Traffic Safety Administration, Conforming Products List for Evidential Breath Measurement Devices, March 11, 2010, and addendums.

Alcohol Testing Sites, Forms and Supplies . The testing site will ensure visual and aural privacy to the employee being tested to prevent unauthorized persons from seeing or hearing test results. The site will have the needed personnel, materials, equipment, and facilities to provide for the collection and analysis of breath and/or saliva samples, and a suitable clean surface for writing. The site will be able to prevent unauthorized personnel from entering the testing site, and ensure no unauthorized employee has access to an unsecured EBT, and that when an EBT or ASD is not being used for testing, it is stored in a secure place. Tests will be conducted on only one employee at a time.⁷²

Only EBTs and ASDs listed on the NHTSA CPL will be used for DOT alcohol testing, and only an EBT must be used for conducting the confirmation tests.⁷³ The QAP and associated manufacturer's instructions will be followed for all EBTs and ASDs used by the Company.⁷⁴ It is the responsibility of the testing sites used by the Company to carry out this responsibility for the Company.⁷⁵

Alcohol Screening Tests . Only the DOT-approved ATF will be used for all Company alcohol tests.⁷⁶ The employee will provide a positive identification through the use of photo ID or by employer representative prior to the test.⁷⁷ The BAT or STT shall explain the testing process to the employee, including showing the employee the instructions on the back of the ATF.⁷⁸ If the employee has a designated testing time and does not appear, the BAT or STT will notify the DER. Testing will begin without undue delay. An alcohol test will be given prior to a drug test and medical attention, if it is required, will not be delayed in order to conduct a test. The testing technician will explain the testing procedure to the employee, including showing the employee the instructions on the back of the ATF. The ATF will be completed and the employee will be asked to sign the ATF. Failure to sign is a refusal to test. The BAT or STT will select, or allow the employee to select, an individually wrapped or sealed mouthpiece from the testing materials and insert it into the device in accordance with the manufacturer's instructions. The employee will be instructed to blow steadily and forcefully into the mouthpiece for at least six seconds or until the device indicates that an adequate amount of breath has been obtained. The employee will be shown the displayed test result. The device will print a label with, or the technician will write, the result and pertinent information on the ATF.⁷⁹

Alcohol Screening with an ASD .⁸⁰ It is not the intent of the Company to use an ASD for an alcohol test. However, it is possible that, when necessary, one may have to be used to conduct the test. In those cases the STT or BAT will follow the manufacturer's instructions, and only use a device that has been under their control. The ASD may be either a saliva device or a breath tube. The expiration date will be shown to the employee. A device will not be used after its expiration date. The device will be opened in the presence of the employee, and the employee will be offered the opportunity to use the device, according to instructions. In any case where the technician uses the device, the device will be inserted into the employee's mouth and gather saliva, with the technician wearing single-use examination gloves while doing so and change them following each test. Assurance will be made that the device has properly activated and that the correct amount of time will be allowed to elapse before reading the result. If problems occur (e.g., the device does not activate, it is dropped on the floor), it will be discarded and a new test will be conducted using a new device. The STT or BAT will note on the ATF the reason for the new test. If efforts to get the ASD to work properly fail, the technician will direct the employee to take a new test immediately, using an EBT for the screening test. Devices, swabs, gloves or other materials used in the prior saliva or breath tube testing will not be used in subsequent tests.

Alcohol Screening Results .⁸¹ A result with an alcohol concentration of less than 0.02 will be recorded on the ATF; the result will be transmitted to the DER, with the test concluded without consequence. A result with an alcohol concentration of 0.02 or higher requires the employee to take a confirmation test. If the same BAT who conducted the alcohol screening test will also conduct the confirmation test, the test will begin immediately. If a different BAT will conduct the confirmation test, the technician conducting the screening test will direct the employee to the site where the test will take place. The technician will also advise the employee not to eat, drink, put anything (e.g., cigarette, chewing gum) into the employee's mouth, or belch, during the 15-minute waiting period until the test occurs. The employee will be observed by the technician or an employer representative on the way to the confirmation testing site. The employee will be directed not to attempt to drive a motor vehicle to the confirmation testing site.

Alcohol Confirmation Test.^{82 83} All alcohol confirmation tests will be conducted by BATs using EBTs. The BAT will ensure that the time since the screening test has been at least 15 minutes, and the employee has been advised not to eat, drink, put anything (e.g., cigarette, chewing gum) into the employee's mouth, or belch. The BAT will conduct an air blank on the EBT in the presence of the employee. The reading must be 0.00 for the test to proceed. If the reading is greater than 0.00, another air blank must be conducted; the EBT must not be used (taken out of service) if the second reading is greater than 0.00. The EBT cannot be used for testing until it is found to be within tolerance limits on an external check of calibration. A new sealed mouthpiece will be opened, in view of the employee, and used for the test. The employee will be instructed to blow steadily and forcefully into the mouthpiece for at least six seconds or until the device indicates that an adequate amount of breath has been obtained. The results will be shown to the employee and printed for application to the ATF.

Alcohol Confirmation Results . If the alcohol confirmation test result is lower than 0.02, nothing further is required of the employee. If the alcohol confirmation test result is 0.02 or higher, the BAT will immediately transmit the result directly to the DER in a confidential manner.

Problems in Alcohol Testing .^{84 85 86} The Plan addresses the situations in which an employee has refused to take an alcohol test. See Section IV.6, "DOT Alcohol Violations and Prohibited Conduct." In situations where an employee is unable to provide sufficient saliva to complete a screening test, the Company will ensure that the employee takes a breath test immediately. In situations where an employee is unable to provide sufficient breath to complete a test, the employee will be sent for an evaluation, by a licensed physician who is acceptable to the Company. The physician will have expertise in the medical issues raised by the employee's failure to provide a breath specimen, as well as be apprised of the consequences of the appropriate DOT agency regulation for refusing to take the required alcohol test. The physician will provide the Company with a signed statement of their conclusions. If it is the reasonable medical judgment of the physician, that a medical condition has, or with a high degree of probability could have, precluded the employee from providing a sufficient amount of breath, the test will be canceled by the Company. If there is not an adequate basis for determining that a medical condition has, or with a high degree of probability could have, precluded the employee from providing a sufficient amount of breath, this constitutes a refusal to test.

Canceling an Alcohol Test.⁸⁷ The Company will ensure that an alcohol test is canceled if a fatal flaw occurs. Fatal flaws are: 1) in the case of a screening test conducted on a saliva ASD or a breath tube ASD, the STT or BAT reads the result either sooner than or later than the time allotted by the manufacturer; the saliva ASD does not activate; the device is used for a test after its expiration date; or, in the case of a screening or confirmation test conducted on an EBT, the sequential test number or alcohol concentration displayed on the EBT is not the same as the sequential test number or alcohol concentration on the printed result; 2) in the case of a confirmation test the BAT conducts the confirmation test before the end of the minimum 15-minute waiting period; the BAT does not conduct an air blank before the confirmation test; there is not a 0.00 result on the air blank conducted before the confirmation test; the EBT does not print the result; or, the next external calibration check of the EBT produces a result that differs by more than the tolerance stated in the QAP from the known value of the test standard. In this case, every result of 0.02 or above obtained on the EBT since the last valid external calibration check is canceled.

The Company will ensure that an alcohol test is canceled if a correctable flaw occurs and is not corrected. Correctable flaws are: the BAT or STT does not sign the ATF; the BAT or STT fails to note on the "Remarks" line of the ATF that the employee has not signed the ATF after the result is obtained; and, the BAT or STT uses a non-DOT form for the test.

Correcting Alcohol Problems.⁸⁸ The Company will ensure that BATs and STTs will try to successfully complete each alcohol test for an employee. If they become aware of a problem that will cause the test to be canceled, they will try to correct the problem promptly, if practicable. Repeating the test is an acceptable part of this process. If repeating the testing process is necessary, a new test (new ATF, new device) must begin as soon as possible. If repeating the testing process is necessary, the technician is not limited in the number of attempts to complete the test, provided that the employee is making a good faith effort to comply with the testing process. If another testing device is not available for the new test at the testing site, the technician will immediately notify the DER and

advise the DER that the test could not be completed. The DER will make all reasonable efforts to ensure that the test is conducted at another testing site as soon as possible. If the Company or its service agent administering the testing process becomes aware of a correctable flaw that has not been corrected, all practicable action will be taken to correct the problem so that the test is not cancelled. If the problem resulted from the omission of required information, the person responsible for providing the information must supply in writing the missing information and a signed statement that it is true and accurate.

If the problem is the use of a non-DOT form, the technician must, as the person responsible for the use of the incorrect form, certify in writing that the incorrect form contains all the information needed for a valid DOT alcohol test. The technician must also provide a signed statement that the incorrect form was used inadvertently or as the only means of conducting a test, in circumstances beyond the technician's control, and the steps the technician has taken to prevent future use of non-DOT forms for DOT tests. The technician must supply this information on the same business day on which the collector was notified of the problem, transmitting it by fax, e-mail or courier. If the technician cannot correct the problem, the technician must cancel the test.

VII. PROGRAM ELEMENTS COMMON TO DRUG AND ALCOHOL

1. Substance Abuse Professional

Compliance. The Company will follow the requirements of Part 40 for its Substance Abuse Professional (SAP) obligations. A full description of the SAP requirements is in Part 40, Subpart O ("Substance Abuse Professionals and the Return-to-Duty Process").

Qualifications.⁸⁹ The Company will refer employees only to SAP's who have the credentials, basic knowledge, and qualification training, including fulfilling obligations for continuing education courses, for DOT violations. The SAP will not be an advocate for the Company or the employee. The SAP's function is to protect the public interest in safety by professionally evaluating the employee and recommending appropriate education/treatment, follow-up tests, and aftercare.

SAP Referral.⁹⁰ The Company will provide to each employee who violates a DOT drug and alcohol regulation a listing of SAP's readily available to the employee and acceptable to the Company. The list will include SAP names, addresses, and telephone numbers. There will not be a charge to the employee for compiling or providing this list. The Company may use its C/TPA or other service agent to provide this information. Any covered employee who has violated DOT drug and alcohol regulations cannot again perform any DOT safety-sensitive duties for this Company until and unless the employee successfully completes the SAP evaluation, referral, and education/treatment process.

Payment. The Company is not required to pay for a SAP evaluation or any subsequent recommended education or treatment for an employee who has violated a DOT drug and alcohol regulation.

Company Responsibility. The Company is only bound by DOT to ensure that if the employee is provided an opportunity to return to a DOT safety-sensitive duty following a violation, that the Company ensure that the employee receives an evaluation by a SAP meeting the requirements of Part 40 and that the employee successfully complies with the SAP's evaluation recommendations before returning to the safety-sensitive job. Even if a SAP believes that the employee is ready to return to safety-sensitive work, the Company is under no obligation to return the employee to work. Under the DOT regulations, hiring and reinstatement decisions are left to the employer. The DOT leaves all payment issues for SAP evaluations and services to the Company and the employee to resolve.

SAP Process. The SAP will make a face-to-face clinical assessment and evaluation to determine what assistance is needed by the employee to resolve problems associated with alcohol and/or drug use. The SAP will refer the employee to an appropriate education and/or treatment program. At the completion of the education and/or treatment, the SAP will conduct a face-to-face follow-up evaluation to determine if the employee actively participated in the education and/or treatment program and demonstrated successful compliance with the initial assessment and evaluation recommendations. Reports will be provided to the Company on both the initial requirements and the outcome of the follow-up evaluation. The report will be specific and will include all of the Part 40 requirements of a written SAP report. The SAP will provide the DER with a written follow-up drug and/or alcohol testing plan for the employee and, if deemed necessary, will also provide the

employee and the Company with recommendations for continuing education and/or treatment.

2. Employee Assistance Program^{91 92}

The Company will provide an Employee Assistance Program (EAP) for its employees and supervisors. The EAP may be established "in house," as part of internal personnel service or may be contracted to an entity that provides EAP services at other locations. The function of the EAP will be to provide employees with informational material on the awareness and danger of drug and alcohol use. General EAP-information material, such as the availability of brochures or videos, and community service "hotline" telephone numbers will be displayed in common areas and distributed to employees. Employees will be encouraged to call the hotline if needed. Additionally, this Plan will be displayed and made available to all employees. The Plan contains the employer's policy regarding the use of prohibited drugs and alcohol misuse. The areas and places in which the above material will be displayed include employee bulletin boards, break rooms, locker rooms, or other areas designated by the Company.

3. Supervisor Training^{93 94 95}

Each supervisor who will determine whether an employee must be drug tested and/or alcohol tested based on reasonable suspicion/cause will be trained in the "signs and symptoms" of each substance. Each supervisor will receive one 60-minute period of training on the specific, contemporaneous physical, behavioral, and performance indicators of probable *drug* use and one 60-minute period of training on the specific, contemporaneous physical, behavioral, and performance indicators of probable *alcohol* use. The two 60-minute training periods may run concurrently.

4. Contractor Monitoring^{96 97}

Compliance. Operators are responsible for ensuring that contractors and contractor employees working for, and/or on the properties of, the operator are in compliance with the requirements of Part 40 and 199. With respect to those covered employees who are contractors or employed by a contractor, an operator may provide by contract that all requirements of Part 40 and 199 will be carried out by the contractor.

To assure that the contractor is in full compliance, the contractor will allow access to property and records by the operator, the operator designee, the Administrator, any DOT agency with regulatory authority over the operator or covered employee, and, if the operator is subject to the jurisdiction of a state agency, a representative of the state agency for the purposes of monitoring the operator's compliance with the requirements of Part 40 and 199. The operator will ensure that all contractors are qualified prior to commencing, as well as during the performance of, covered functions for the operator.

Qualifying Potential Contractor. Qualifications of the potential contractor as it pertains to drug and alcohol testing policies and procedures are assured by requesting the potential contractor to submit a copy of its Plan for review and compliance with PHMSA regulations. After review of the Plan is completed, written correspondence to the contractor will advise whether or not it is acceptable or in need of further additions, deletions, revisions or clarifying language. The review of the contractor Plan shall be completed utilizing the criteria established by PHMSA.

Monitoring Contractor's Compliance. The contractor may be required to provide information on their employees who will perform covered functions for the operator. This information will include, as a minimum, the name, type of test and test date of the employees who will perform any work or functions covered by Part 199 under that contract. A list of each contractor's covered employees may be distributed to appropriate Company field management. All contractors will be required to submit drug and alcohol testing statistical information on a periodic basis, which may be based on the duration of the contract. Typically, this requirement will be on a semi-annual basis. The Company may require a more frequent schedule for submission of drug and alcohol testing data should they determine a need for such statistics. The Company shall maintain a complete file on each contractor's statistical drug and alcohol testing reports. The Company shall make these reports available when requested by a PHMSA agency-designated representative, or representatives of

those state agencies under which jurisdiction the Company operates. The operator will also submit contractor Management Information System (MIS) reports to PHMSA by March 15th each year.

The contractor will cooperate with the operator, or the operator's designee, if additional information is requested to further verify compliance of the regulations.

5. Recordkeeping^{98 99 100}

Compliance. The Company will ensure that all records required by the DOT are maintained. The Company is not required to keep records related to a program requirement that does not apply to Part 40 or 199. The Company or its C/TPA will maintain the records in a locked file system and will be accessed only on a strict "need to know" basis. The Company or its C/TPA will not release an employee's drug and alcohol records to third parties without the employee's specific written consent. A "third party" is any person or organization to whom Parts 40 or 199 do not explicitly authorize or require the transmission of information in the course of the drug and alcohol testing process. "Specific written consent" means a statement signed by the employee that he or she agrees to the release of a particular piece of information to a particular, explicitly identified, person or organization at a particular time.

The Company or its C/TPA will release the employee's information without consent to DOT, PHMSA, or other government agency having regulatory authority over the Company or employee without consent. The Company or its C/TPA will release the employee's information without consent as a part of an accident investigation by the National Transportation Safety Board. The Company or its C/TPA will release the employee's information without consent in certain legal proceedings. These proceedings include a lawsuit, grievance, administrative proceeding (e.g., an unemployment compensation hearing brought by or on behalf of an employee resulting from a positive drug or alcohol test or refusal to test), a criminal or civil action resulting from an employee's performance of safety-sensitive duties, in which a court of competent jurisdiction determines that the drug or alcohol test information sought is relevant to the case and issues an order directing the Company to produce the information. In such a proceeding the information will be released to the decision maker in the proceeding with a binding stipulation that the decision maker to whom it is released will make it available only to parties to the proceeding. After releasing the information, the Company or its C/TPA will notify the employee.

If the Company uses a C/TPA to maintain the records, the Company will ensure that the C/TPA can produce these records at the Company's principal place of business in the time required by the DOT agency for an inspection. The records will be provided within two business days after receipt of the request. Most records will be stored electronically, where permitted by Part 40 and 199. The Company will ensure that the records are easily accessible, legible, and formatted and stored in an organized manner. If electronic records do not meet these criteria for the DOT inspector, the Company will convert them to printed documentation in a rapid and readily auditable manner, at the request of DOT agency personnel.

Records and Retention Periods . The Company or its C/TPA will maintain the following records for the noted time periods, as a minimum:

- a) Records kept for **five** years:
 - (1) Records of alcohol test results indicating an alcohol concentration of 0.02 or greater;
 - (2) Records of the inspection, maintenance, and calibration of EBTs;
 - (3) Records of verified positive drug test results;
 - (4) Documentation of refusals to take required alcohol and/or drug tests (including substituted or adulterated drug test results);
 - (5) SAP reports;
 - (6) Follow-up tests and schedules for follow-up tests; and,
 - (7) Statistical data related to the Company's testing program, entitled "Management Information System," will be available to a representative of DOT, PHMSA, or a state agency having regulatory authority over the Company upon request.

- b) Records kept for **three** years:
 - (1) Records of information obtained from previous employers under Part 40 concerning drug and alcohol test results of employees;
 - (2) Records that demonstrate the drug-testing collection process; and,
 - (3) Records related to “signs and symptoms” alcohol and drug training for supervisors.
- c) Records kept for **two** years:
 - (1) Records related to the alcohol collection process (i.e., calibration documentation for evidential breath testing devices, documentation of breath alcohol technician training, documents generated in connection with decisions to administer reasonable suspicion alcohol tests, documents generated in connection with decisions on post-accident tests, and documents verifying existence of a medical explanation of the inability of a covered employee to provide adequate breath for testing); and,
- d) Records kept for **one** year:
 - (1) Negative drug test results.
 - (2) Alcohol results less than 0.02.

Employee Request for Records . All employees have the right to request and obtain copies of any records pertaining to the employee's use of alcohol and/or drugs, including records of the employee's DOT-mandated drug and/or alcohol tests, and copies of SAP reports. Requests for records must be made in writing to the DER. A laboratory must provide, within 10 business days of receiving a written request from an employee, and made through the MRO, the records relating to the results of the employee's drug test (i.e., laboratory report and data package). Service agents providing records may charge no more than the cost of preparation and reproduction for copies of these records. SAPs must redact follow-up testing information from the report before providing it to the employee.

6. Management Information System ^{101 102 103}

Compliance. The Company will prepare and maintain the DOT Management Information System (MIS) report for its drug and alcohol testing program. This report will be submitted to PHMSA in accordance with annual submission requirements. If the Company uses a C/TPA then the C/TPA may prepare and maintain the MIS, reporting the MIS as the Company requires. The DER will certify each report submitted by a C/TPA for accuracy and completeness.

Contractor Reporting for MIS. If the Company is an operator, it will verify and identify all contractors who performed covered functions, as defined under Part 199, for this Company in a given calendar year. If required, by either mandated annual or PHMSA written request, the Company will submit an MIS report for each of these contractors on or before March 15th.

VIII. Appendix A - Acknowledgement/Receipt Form

I acknowledge, by signing this form, that my full compliance with the Anti-Drug and Alcohol Misuse Prevention Plan (the "Plan") and DOT drug and alcohol regulation requirements is a condition of my initial and continued employment with the Company. I understand and agree that I may be discharged or otherwise disciplined for any drug and/or alcohol violation, committed by me, as cited in the Plan and/or in the DOT drug and alcohol regulatory requirements.

I also acknowledge, by signing this form, that a copy of the Plan has been made available to me and that I have read and understand the requirements of the Company and DOT drug and alcohol program. I have also been provided with informational material on the dangers and problems of drug abuse and alcohol misuse.

Signed, this the _____ day of _____, 20_____.

Employee Name (Please Print)

Employee Signature

Company Representative Name (Please Print)

Company Representative Signature

IX. Appendix B - Designated Personnel and Service Agents

CONSORTIUM/THIRD PARTY ADMINISTRATOR (C/TPA)

Name: DISA, Inc.

Address: 12600 Northborough Dr. Ste. 300, Houston, TX 77067

Phone Number: 281-673-2400

DESIGNATED EMPLOYER REPRESENTATIVE (DER)/ALCOHOL & DRUG PROGRAM MANAGER

Name:

Address:

Phone Number:

MEDICAL REVIEW OFFICER (MRO)

Name: Dr. Barry Sachs

Address: 12600 Northborough Dr., Ste. 300, Houston, TX 77067

Phone Number: 281-673-2400

SUBSTANCE ABUSE & MENTAL HEALTH ADMINISTRATION (SAMHSA/HHS) LABORATORY

Name:

Address:

Phone Number:

COLLECTION SITE(s) - DRUG AND BREATH ALCOHOL

Name:

Address:

Phone Number:

LIST OF APPROVED EVIDENTIAL BREATH TESTING DEVICES (EBTS) UTILIZED:

EBT Manufacture Name and EBT Model Name:

SUBSTANCE ABUSE PROFESSIONAL (SAP)

Name:

Address:

Phone Number:

EMPLOYEE ASSISTANCE PROGRAM (EAP)

Name:

Address:

Phone Number:

G.C.Zarnas & Company

XI. Appendix D - Company Disciplinary Actions and Additional Procedures

1. Company Discipline

Under the Anti-Drug and Alcohol Misuse Prevention Plan, the Company is committed to a drug and alcohol free workplace. Violations to this Plan include:

- a) The presence in the body, possession, use, distribution, dispensing, and/or unlawful manufacture of prohibited drugs and the misuse of alcohol is not condoned while conducting Company business, or while in work areas or Company vehicles on or off Company premises. No employee will work under the influence of prohibited drugs and alcohol.
- b) An employee or applicant who tests positive for drugs, has an alcohol concentration of 0.04 or higher, or refuses to take any drug or alcohol test as directed by the Company.
- c) The prohibited use of alcohol with a test result of 0.02 or greater, but less than 0.04.

Employees violating this Plan will be subject to disciplinary actions up to and including termination. Disciplinary action may include, but is not limited to: removal from working in a covered position, suspension, loss of pay, and termination of employment.

2. Additional Company Procedures

Reservation of Rights. The Company reserves the right to interpret, modify, or revise this policy statement in whole or in part without notice. Nothing in this policy statement is to be construed as an employment contract nor does this alter an employee's employment at-will status. The employee remains free to resign his/her employment at any time for any or no reason, without notice. Similarly, the Company reserves the right to terminate any employee's employment, for any or no reason, without notice.

Compliance with All Laws. This policy statement will be amended from time to time to comply with changes in Federal and State laws.

The Company reserves the right to revise or amend this policy with or without notice at any time.

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK TO ADD ADDITIONAL COMPANY DISCIPLINARY ACTIONS AND PROCEDURES IF NEEDED.

XII. Appendix E – PHMSA Inspection Plan Cross-Reference Endnotes

1 A.01.a. Verify that the operator maintains and follows a written Anti-Drug Plan that conforms to Part 199 and Part 40 and that the plan contains the following [§199.101]: 1) Methods and procedures for compliance with all the requirements of Part 199, including the employee assistance program; 2) The name and address of each laboratory that analyzes the specimens collected for drug testing; 3) The name and address of the operator's Medical Review Officer, and Substance Abuse Professional; and Procedures for notifying employees of the coverage and provisions of the plan.

2 H.01.a. Verify that the operator maintains and follows a written Alcohol Misuse Plan that conforms to Part 199 and Part 40 and that the plan contains methods and procedures for compliance with required testing, recordkeeping, reporting, education and training elements [§199.202].

3 A.02.a. Verify that "stand-down" is prohibited before the MRO has completed the drug test verification process or that an approved waiver is granted per the requirements of [§40.21] and [§199.7].

4 H.02.e. Verify that the educational materials made available to covered employees includes detailed discussion of at least the following [§199.239(b)]: 1) The identity of the person designated by the operator to answer covered employee questions about the materials; 2) The categories of employees who are subject to the provisions of this subpart; 3) Sufficient information about the covered functions performed by those employees to make clear what period of the work day the covered employee is required to be in compliance with this subpart; 4) Specific information concerning covered employee conduct that is prohibited by this subpart; 5) The circumstances under which a covered employee will be tested for alcohol under this subpart; 6) The procedures that will be used to test for the presence of alcohol, protect the covered employee and the integrity of the breath testing process, safeguard the validity of the test results, and ensure that those results are attributed to the correct employee; 7) The requirement that a covered employee submit to alcohol tests administered in accordance with this subpart; 8) An explanation of what constitutes a refusal to submit to an alcohol test and the attendant consequences; 9) The consequences for covered employees found to have violated the prohibitions under this subpart, including the requirement that the employee be removed immediately from covered functions, and the procedures under §199.243; 10) The consequences for covered employees found to have an alcohol concentration of 0.02 or greater but less than 0.04; and 11) Information concerning the effects of alcohol misuse on an individual's health, work, and personal life; signs and symptoms of an alcohol problem (the employee's or a coworker's); and including intervening evaluating and resolving problems associated with the misuse of alcohol including intervening when an alcohol problem is suspected, confrontation, referral to any available EAP, and/or referral to management.

5 B.01.b. Verify that a service agent is not used to fulfill the function of a DER [§40.15(d)].

6 N.01.a. Verify that an employer who is using a service agent concerning whom a PIE is issued stops using the services of the service agent no later than 90 days after the Department has published the decision in the Federal Register or posted it on its web site. The employer may apply to the ODAPC Director for an extension of 30 days if it is demonstrated that a substitute service agent cannot be found within 90 days [§40.409(b)].

7 B.01.a. Verify that critical positions meet the applicable qualifications of Part 40 and 199; 1) Medical Review Officer (MRO), (§40.121 and §199.109(b)); 2) Substance Abuse Professionals (SAP), (§40.81) 3); 3) Urine Specimen Collectors (§40.33).

8 I.01.a. Verify that Alcohol Misuse Prevention Program positions meet the applicable qualification requirements of Part 40 and Part 199 as follows: 1) Screening Test Technician (§40.213); 2) Breath Alcohol Technician (§40.213); and, 3) Substance Abuse Professional (SAP) (§40.281).

9 A.01.d. Verify that DOT tests are completely separate from non-DOT tests in all respects [§40.13].

10 H.01.d. Verify that the Alcohol Misuse Prevention Program ensures that the DOT tests are completely separate from non-DOT tests in all respects [§40.13].

11 A.01.b. Verify that the Plan identifies covered employees (as defined in §199.3), required to be tested for drugs, are identified [§199.1].

12 H.01.b. Verify that the Alcohol Misuse Prevention Program identifies the covered employees (as defined in §199.3) that are required to be tested for the presence of alcohol [§199.1].

13 C.01.a. Verify drug testing information [§40.25(b)] is requested from previous DOT-regulated employers for any employee seeking to begin covered functions for the first time (i.e., a new hire or an employee transfer) [§40.25(a)]. Covered employee must not perform their functions after 30 days from the date on which the employee first performed safety-sensitive functions, unless a good faith effort to obtain the information has been made and documented.

14 J.01.a. Verify that alcohol testing information [§40.25(b)] is requested from previous DOT-regulated employers for any employee seeking to begin covered functions for the first time (i.e., a new hire or an employee transfer) [§40.25(a)]. In addition, verify that a covered employee must not perform their functions after 30 days from the date on which the employee first performed safety-sensitive functions, unless you have obtained or made and documented a good faith effort to obtain alcohol testing information from previous DOT-regulated employers.

15 H.02.a. Verify that the Alcohol Misuse Plan ensures that a covered employee is not permitted to perform covered functions if the employee has engaged in violations of §§199.215 through 199.223 (see below) or an alcohol misuse rule of another DOT agency [§199.233]. 1) Having an alcohol concentration of 0.04 or greater [§40.23(c), §40.285 and §199.215]; 2) Using alcohol while performing covered functions [§199.217, On-duty use]; 3) Using alcohol within 4 hours prior to performing covered functions, or, if an employee is called to duty to respond to an emergency, within the time period after the employee has been notified to report for duty [§199.219, Pre-duty use]; 4) A covered employee, who has actual knowledge of an accident in which his or her performance of

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covered functions has not been discounted by the operator as a contributing factor to the accident, is prohibited from using alcohol for 8 hours following the accident, unless he or she has been given a post-accident test under §199.225(a), or the operator has determined that the employee's performance could not have contributed to the accident [§199.221, Use following an accident]; and, 5) Upon refusal of a covered employee to submit to a post-accident alcohol test required under §199.225(a), a reasonable suspicion alcohol test required under §199.225(b), or a follow-up alcohol test required under §199.225(d) [§40.285 and §199.223, Refusal to submit to a required alcohol test].

16 H.02.c. Verify that the Alcohol Misuse Prevention Program assures that a covered employee is prohibited from performing or continuing to perform covered functions when found to have an alcohol concentration of 0.02 or greater but less than 0.04, until: The employee's alcohol concentration measures less than 0.02 in accordance with a test administered under §199.225(e); or The start of the employee's next regularly scheduled duty period, but not less than 8 hours following administration of the test [§40.23(c) and §199.237(a)].

17 A.02.b. Verify that a covered employee that violates DOT drug regulations is removed from performing safety-sensitive functions [§40.23 and §199.7]. A verified positive DOT drug test result or a refusal to test (including by adulterating or substituting a urine specimen) constitutes a violation of DOT drug regulations [§40.285(b) and §199.103(a)]. If a covered employee violates a DOT drug regulation, a listing of SAPs that are readily available is provided to the employee [§40.287].

18 C.01.b. Verify no new personnel (new hire, contracted, or transferred employees) are used to perform covered functions unless that person receives a negative drug test and or is covered by the Plan that conforms to Part 199 [§199.105(a)]. Procedures are in place for direct observation when required under §§40.67(a), (b) and (d).

19 C.02.a. Verify post-accident drug testing is performed, as soon as possible but no later than 32 hours after an accident (§ 195.50) or incident (§ 191.3), for each employee whose performance either contributed to the accident or cannot be completely discounted as a contributing factor to the accident [§199.105(b)]. In addition, procedures are in place for direct observation when required under §§40.67(a), (b) and (d).

20 C.03.a. Verify the minimum annual percentage rate used for random drug testing of covered employees complies with §199.105(c)(1) through (4).

21 C.03.b. Verify the selection of employees for random drug testing is based on a scientifically valid method, such as a random number table or a computer-based random number generator matched with employee identification data [199.105(c)(5)].

22 C.03.c. Verify a sufficient number of covered employees will be selected for random testing during each calendar year to equal an annual rate not less than the required minimum annual percentage rate (see Protocol C.03.a.) [199.105(c)(6)]. The total number of covered employees eligible for random testing throughout the year will be calculated by adding the total number of covered employees eligible for testing during each random testing period for the year and dividing that total by the number of random testing periods [199.119(c)].

23 C.03.d. Verify random drug tests are unannounced and that the dates for administering the tests are spread reasonably throughout the calendar year [199.105(c)(7)].

24 C.04.a. Verify decisions to test are reasonable and articulable, and based on specific contemporaneous physical, behavioral or performance indicators of probable drug use. At least two supervisors, one of whom is trained in detection of the symptoms of drug use, substantiate and concur in the decision to test an employee who is reasonably suspected of drug use [§199.105(d)].

25 C.05.a. Verify a covered employee that violates DOT drug regulations does not return to duty for a covered function until the employee: 1) Completes a SAP evaluation, referral, and education/treatment process [§40.285(a), §40.289(b), and §199.105(e)]; 2) After completion of the SAP process above, successfully completes a return-to-duty drug test [§40.305(a) and §199.105(e)]; and 3) All return-to-duty testing will be performed under direct observation [§40.67(b)].

26 C.06.a. Verify SAP will establish a written follow-up testing plan for a covered employee that violates DOT drug regulations and seeks to return to the performance of a covered function [§40.307(a)]. All follow-up testing will be performed under direct observation [§40.67(b)].

27 C.06.b. Verify follow-up testing is performed on an unannounced basis, at a frequency established by the SAP, for a period of not more than 60 months. At least six tests must be conducted within the first 12 months following the covered employee's return to duty. [§40.307, §40.309, and §199.105(f)].

28 C.07.a. Verify procedures are in place for direct observation when required under §§40.67(a), (b) and (d).

29 B.01.a. Urine Specimen Collector (§40.33) meet the applicable qualification requirements of Part 40 and Part 199.

30 O.01.a. Does the operator ensure that, unless no other collector is available, an immediate supervisor of an employee does not serve as a collection site person [§40.31(c)]?

31 O.01.b. Do collectors meet the training requirements of §40.33 and is documentation available showing that currently all requirements are met [§40.33(g)]?

32 O.01.c. Does the operator provide error correction training as required by §40.33(f) and does the training occur within 30 days of the date of notification of the error that led to the need for training?

33 O.02.a. Has the employer designated a collection site that meets the requirements of §40.41.

34 O.02.b. If the collection site uses a facility normally used for other purposes, are procedures in place to ensure before the collection that: (1) access to collection materials and specimens is effectively restricted; and (2) the facility is secured against access

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during the procedure to ensure privacy to the employee and prevent distraction of the collector? Also, are limited-access signs posted [§40.43(c)]?

35 O.02.c. Are procedures in place to assure the collector maintains personal control over each specimen and CCF throughout the collection process and to prevent unauthorized personnel from entering any part of the site in which urine specimens are collected or stored [§40.43(d)(5) and §40.43(e)]?

36 O.02.d. Is the current Federal Drug Testing Custody and Control Form (CCF) or equivalent being used [§40.45]?

37 O.02.e. Is a collection kit used that meets the requirements of Appendix A to Part 40 [§40.49]?

38 O.03.a. Do collection site personnel explain the basic collection procedure to the employee, including showing the employee the instructions on the back of the CCF [§40.61(e)]?

39 O.03.b. Do collection site personnel provide the donor with an individually wrapped or sealed collection container from the collection kit materials [§40.63(c)]?

40 O.03.c. Are precautions taken to ensure that unadulterated specimens are obtained and correctly identified that meet the following requirements: 1) Bluing agents in toilet tank and all water sources secure [§40.43(b)(1) and (2)]; 2) Individual positively identified (photo ID, etc.) [§40.61(c)]; 3) Proper authority contacted if individual fails to arrive at the assigned time [§40.61(a)]; 4) The donor shall remove any unnecessary outer garments. Purses or briefcases shall remain with outer garments [§40.61(f)]; 5) Donor shall wash and dry his/her hands [§40.63(b)]; 6) To the greatest extent possible, the collector must keep an employee's collection container within view of both himself/herself and the employee between the time the employee has urinated and the specimen is sealed [§40.43(d)(2)]; and, 7) Any unusual behavior noted on the CCF [§40.63(e)]

41 O.03.d. Are procedures being followed at the collection site after the specimen has been provided in compliance with the requirements of §40.65

42 O.03.e. Have provisions been made if the donor is unable to provide at least 45 milliliters of urine [§40.65(a)]?

43 O.03.f. Are procedures in place for immediately collecting urine specimens under direct observation for the situations identified in §40.67(c). As of August 31, 2009, verify that all collections for return-to-duty and follow-up testing were performed under DER directed direct observation [§40.67(b)]

44 O.03.g. Are same gender collection personnel used if a collection is monitored under direct observation by non-medical personnel [§40.69(g)]

45 O.03.h. Is the CCF properly executed by authorized collection site personnel upon receipt and transfer of a urine specimen [§40.73(a)]

46 D.01.a. Verify drug testing laboratory used for all testing required by Part 40 and Part 199 is certified by the Department of Health and Human Services (HHS) [§40.81(a) and §199.107(a)].

47 D.01.c. Verify laboratory results are reported directly, and only, to the MRO at his or her place of business. Results must not be reported to or through the DER or a service agent (e.g., C/TPA) [§40.97(b)].

48 D.01.b. Verify drug testing laboratory only tests for the following five drugs or classes of drugs in a DOT drug test. (The laboratories must not test "DOT specimens" for any other drugs): (a) Marijuana metabolites; (b) Cocaine metabolites; (c) Amphetamines; (d) Opiate metabolites; and (e) Phencyclidine (PCP) [§40.3, §40.85 and §199.3].

49 D.01.d. Verify laboratory testing the primary specimen will retain a specimen that was reported with positive, adulterated, substituted, or invalid results for a minimum of one year. The specimen must be kept in secure, long-term, frozen storage in accordance with HHS requirements [§40.99 and §199.111(a)].

50 D.03.a. Verify laboratory retains all records pertaining to each employee urine specimen for a minimum of two years and also keeps for two years employer-specific data required in §40.111 [§40.109].

51 D.03.b. Verify laboratory transmits an aggregate statistical summary to the Company per Part 40, Appendix B, on a semi-annual basis.

52 D.02.a. If the Company or C/TPA, used by the Company, has an aggregate of 2000 or more DOT-covered employees, blind specimens are submitted to the laboratories used. If the Company or C/TPA has an aggregate of fewer than 2000 DOT-covered employees, DOT does not require them to provide blind specimens [§40.103(a)].

53 E.01.a. Verify that an MRO is designated or appointed by the Anti-Drug Plan [§199.109(a)].

54 E.01.b. Verify that the MRO provides quality assurance reviews of the drug testing process, including ensuring the review of the Custody and Control Form (CCF) on all specimen collections [§40.123(b)].

55 E.01.c. Verify that the MRO performs the review functions required by §40.127 for negative drug test results received from a laboratory, prior to verifying the result and releasing it to the Designated Employer Representative (DER).

56 E.01.d. Verify that the MRO performs the review functions required by §40.129 for confirmed positive, adulterated, substituted, or invalid drug test results received from a laboratory, prior to verifying the result and releasing it to the DER. In addition, the MRO must determine whether there is a legitimate medical explanation for confirmed positive, adulterated, substituted, and invalid drug test results from the laboratory [§40.123(c)].

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57 F.02.a. Verify that the MRO reports all drug test results to the operator [§40.163(a) and §199.109(d)] in accordance with the requirements in §40.163, §40.165 and §40.167. These requirements include: Reporting all drug test results to the DER, except in the circumstances provided for in §40.345, when a C/TPA may act as an intermediary [§40.165(a)]; reporting the results in a confidential manner [§40.167(a)]; and reporting the results within the required time constraints [§40.167(b) and (c)].

58 E.01.e. Verify that when the MRO has verified a drug test as positive for a drug or drug metabolite, or as a refusal to test because of adulteration or substitution, and the MRO must notify the employee of his or her right to have the split specimen tested. The MRO must also notify the employee of the procedures for requesting a test of the split specimen, and Inform the employee that he or she has 72 hours from the time of this notification to him or her to request a test of the split specimen [§40.153].

59 E.01.f. If additional testing is requested by the employee, verify that the split specimen is tested. The split testing laboratory must be certified by HHS. (Note: Correction made to inspection language.) [§199.111(b) and (c)].

60 J.01.b. If the operator chooses to conduct pre-employment alcohol testing, verify that the operator: 1) Conducts a pre-employment alcohol test before the first performance of covered functions by every covered employee (whether a new employee or someone who has transferred to a position involving the performance of covered functions) [§199.209(b)(1)]; 2) Treats all covered employees the same for the purpose of pre-employment alcohol testing (i.e., you must not test some covered employees and not others) [§199.209(b)(2)]; and, 3) Conducts the pre-employment tests after making a contingent offer of employment or transfer, subject to the employee passing the pre-employment alcohol test [§199.209(b)(3)].

61 J.02.a. Verify that post-accident alcohol testing is performed: 1) As soon as practicable following an accident (§195.50) or incident (§191.3) for each surviving covered employee if that employee's performance of a covered function either contributed to the accident or cannot be completely discounted as a contributing factor to the accident [§199.225(a)(1)]; and, 2) Within two hours following the accident (§195.50) or incident (§191.3), otherwise, the operator shall prepare and maintain on file a record stating the reasons the test was not promptly administered. If a post-accident test is not administered within eight hours following the accident, the operator shall cease attempts to administer an alcohol test and shall state in the record the reasons for not administering the test [§199.225(a)(2)].

62 J.03.a. Verify that decisions to test are based on specific, contemporaneous, articulable observations concerning the appearance, behavior, speech, or body odors of the employee. The required observations shall be made by a supervisor who is trained in detecting the symptoms of alcohol misuse [§199.225(b)(2)].

63 J.03.b. Verify that a covered employee is directed by the operator to undergo reasonable suspicion testing for alcohol only while the employee is performing covered functions; just before the employee is to perform covered functions; or just after the employee has ceased performing covered functions. [§199.225(b)(3)].

64 J.03.c. Verify that if a reasonable suspicion test is required and is not administered within 2 hours following the determination under §199.225(b)(2), the operator shall prepare and maintain on file a record stating the reasons the test was not promptly administered. If a test is not administered within 8 hours, the operator shall cease attempts to administer an alcohol test and shall state in the record the reasons for not administering the test [§199.225(b)(4)(i)].

65 J.04.a. Verify that a covered employee that engages in conduct prohibited by §§199.215 through 199.223 does not return to duty for a covered function until the employee: 1) Completes a SAP evaluation, referral, and education/treatment process [§40.285(a), §40.289(b), §199.235, and §199.243(b)]; and, 2) After completion of the SAP process above, undergoes a return-to-duty alcohol test with a result indicating an alcohol concentration of less than 0.02 [§40.305(a), §199.225(c), and §199.243(c)].

66 J.05.a. Verify that the SAP establishes a written follow-up testing plan for a covered employee that engages in conduct prohibited by §§199.215 through 199.223 and seeks to return to the performance of a covered function [§40.307(a)].

67 J.05.b. Verify that follow-up testing is performed on an unannounced basis, at a frequency established by the SAP, for a period of not more than 60 months. At least six tests must be conducted within the first 12 months following the covered employee's return to duty [§40.307, §40.309, §199.225(d) and §199.243(c)(2)(ii)].

68 K.01.a. Verify that any Evidential Breath Testing Device (EBT) or Alcohol Screening Device (ASD) used for DOT required alcohol testing is approved by the National Highway Traffic Safety Administration (NHTSA) and placed on a Conforming Products List (CPL) [§40.229 and §40.231]

69 K.01.b. Verify that external calibration checks are performed at the intervals specified in the manufacturer's instructions for any EBT used for DOT required alcohol confirmation testing [§40.231 and §40.233].

70 P.01.a. Does the operator's plan specify training for BATs and STTs that is in compliance with §40.213 and does the documentation certify that all requirements are met [§40.213(g)]

- 71 P.01.b.** Does the plan specify that a supervisor shall not serve as the BAT or STT if that supervisor makes the reasonable cause determination [§40.211(c) and §199.225(b)(2)].
- 72 P.02.a.** Does the alcohol testing site comply with the applicable physical and security requirements of §40.221 and §40.223?
- 73 P.02.b.** Does the plan specify that only EBTs and ASDs listed on the NHTSA CPL will be used for DOT alcohol testing [§40.229]? Also, does the plan specify that an EBT must be used for conducting the confirmation tests [§40.231(a)]?
- 74 P.02.c.** Does the operator follow the Quality Assurance Plan (QAP) for the EBT that is used [§40.233(c)(1)]? If this service is contracted out does the operator ensure that the QAP is being followed [§40.233(c)]?
- 75 P.02.d.** Does the plan specify that the operator or its agents shall comply with the QAP and manufacturer's instructions and does the operator follow the QAP for the ASD that is used [§40.235 and §40.235(c)]?
- 76 P.03.a.** Does the plan prescribe that only the DOT-approved Alcohol Testing Form (ATF) shall be utilized [§40.225(a)]?
- 77 P.03.b.** Does the plan specify that the employee shall provide a positive identification through use of photo ID or by employer representative [§40.241(c)]?
- 78 P.03.c.** Does the plan indicate that the BAT or STT shall explain the testing process to the employee [§40.241(e)]?
- 79 P.03.d.** Does the plan contain specific instructions for conducting alcohol screening tests in compliance with §40.241 and §40.243 requirements?
- 80 P.03.e.** Does the plan contain specific instructions for conducting alcohol screening tests using a saliva ASD in compliance with §40.245 requirements?
- 81 P.03.f.** Does the plan specify actions that are taken after receipt of alcohol screening test results that are in compliance with §40.247?
- 82 P.04.a.** Does the plan provide guidance for the actions a new BAT must complete to conduct a confirmation test in compliance with §40.251(b)?
- 83 P.04.b.** Does the plan specify procedures to be followed in conducting a confirmation test that are in compliance with §40.253 and §40.255?
- 84 P.05.a.** Does the plan address the situations for which the employee is considered to have refused to take an alcohol test [§40.261(a)(1) to (7)]?
- 85 P.05.b.** Does the plan specify procedures concerning an employee's inability to provide an adequate amount of saliva for testing and instructions for requiring the employee to attempt again to provide adequate amount of saliva for testing [§40.263]?
- 86 P.05.c.** Does the plan specify procedures concerning an employee's inability to provide an adequate amount of breath for testing in compliance with §40.265?
- 87 P.05.d.** Does the plan specify under what conditions that an alcohol test shall be cancelled [§40.267 and §40.269]?
- 88 P.05.e.** Does the plan specify procedures concerning the potential inability to complete an alcohol test and trying to successfully complete the test [§40.271]?
- 89 B.01.a.** Substance Abuse Professionals (SAP) meet the applicable qualification requirements of Part 40 (§40.81) and Part 199.
- 90 H.02.b.** Verify that the Alcohol Misuse Prevention Program assures that each covered employee who has engaged in conduct prohibited by §§199.215 through 199.223 shall be advised of the resources available to the covered employee in evaluating and resolving problems associated with the misuse of alcohol. This includes the names, addresses, and telephone numbers of substance abuse professionals and counseling and treatment programs [§40.285(b) and §199.243(a)]
- 91 G.01.b.** Verify that education under the EAP includes at least the following elements: display and distribution of informational material; display and distribution of a community service hot-line telephone number for employee assistance; and display and distribution of the employer's policy regarding the use of prohibited drugs [§199.113(b)].
- 92 H.02.d.** Verify that the Alcohol Misuse Prevention Program assures for providing educational materials that explain alcohol misuse requirements and the operator's policies and procedures with respect to meeting those requirements [§199.239(a)]. The operator shall ensure that a copy of these materials is distributed to each covered employee prior to start of alcohol testing under this subpart, and to each person subsequently hired for or transferred to a covered position [§199.239(a)(1)]. Each operator shall provide written notice to representatives of employee organizations of the availability of this information [§199.239(a)(2)].

93 G.01.a. Verify that an EAP is provided for its employees and supervisory personnel who will determine whether an employee must be drug tested based on reasonable cause. Each EAP must include education and training on drug use (see Protocols G.01.b. and G.01.c.) [§199.113(a)].

94 G.01.c. Verify that training under the EAP for supervisory personnel who will determine whether an employee must be drug tested based on reasonable cause must include one 60-minute period of training on the specific, contemporaneous physical, behavioral, and performance indicators of probable drug use [§199.113(c)].

95 I.01.b. Verify that supervisors designated to determine whether reasonable suspicion exists to require a covered employee to undergo alcohol testing under §199.225(b) receive at least 60 minutes of training on the physical, behavioral, speech, and performance indicators of probable alcohol misuse. [§199.241].

96 A.01.c. If an employer contracts drug testing, education and training [§199.115], there is a process in place and implemented to ensure compliance with Part 199 and Part 40. The contractor must allow access to property and records by the operator, the Administrator, and if the operator is subject to the jurisdiction of a state agency, a representative of the state agency for the purpose of monitoring the operator's compliance [§199.115(b)].

97 H.01.c. If an employer contracts alcohol testing, education and training [§199.245], there is a process in place and implemented to ensure compliance with Part 199 and Part 40. The contractor must allow access to property and records by the operator, the Administrator, any DOT agency with regulatory authority over the operator or covered employee, and, if the operator is subject to the jurisdiction of a state agency, a representative of the state agency for the purposes of monitoring the operator's compliance with the requirements of Part 199 and Part 40 [§199.245(c)].

98 L.01.a. Verify that the following records are retained as required by Part 40 and Part 199 and that the records are maintained in a secure location with controlled access [§40.333(c) and §199.227(a)]. 5 years: Records of alcohol test results indicating an alcohol concentration of 0.02 or greater [§40.333(a)(1) and §199.227(b)(1)]; Documentation of refusals to take required alcohol tests [§40.333(a)(1) and §199.227(b)(1)]; SAP reports [§40.333(a)(1) and §199.227(b)(1)]; All follow-up tests and schedules for follow-up tests [§40.333(a)(1)]; MIS annual report data [§199.227(b)(1)]; and, Calibration Documentation [§199.227(b)(1)]. 3 years: Information obtained from previous employers under §40.25 concerning alcohol test results of employees [§40.333(a)(2)]. 2 years: Records of the inspection, maintenance, and calibration of EBTs [§40.333(a)(3)].

99 M.02.a. Verify that upon written request from an employee, records of drug and alcohol use, testing results, and rehabilitation are provided to the employee [§199.117(b) and §199.231(b)].

100 F.01.a. Verify that records are retained as required by Part 40 and Part 199 and that the records are maintained in a location with controlled access [§40.333(c)]

101 M.01.a. Verify if this operator has more than 50 covered employees and submits an annual MIS report in accordance with the form and instruction requirements of §40.26 and Appendix H to Part 40, not later than March 15 of each year for the prior calendar year (January 1 through December 31) [§40.26, §199.119(a) and §199.229(a)]. Beginning with the March 15, 2010 MIS submission date, also verify if this operator identifies all contractors who performed covered functions, as defined under § 199.3, for this operator in a given calendar year; and, if required by either mandated annual or PHMSA written request, is or has submitted an MIS report for each of these contractors?

102 M.01.b. Verify if this operator has 50 or less covered employees and has either a compilation of data or statistical information regarding drug and alcohol testing which, upon written request, could have been used to submit a MIS report in accordance with the form and instruction requirements of §40.26 and Appendix H to Part 40, not later than March 15 of each year for the prior calendar year (January 1 through December 31) [§40.26, §199.119(a) and §199.229(a)]. Beginning with the March 15, 2010 MIS submission date, verify that this operator identifies all contractors who performed covered functions, as defined under § 199.3, for this operator and received a compilation of data or statistical information from these contractors which, upon written request, could be used for submitting an MIS report for each of these contractors.

103 M.01.c. If a service agent (e.g., Consortium/Third Party Administrator) prepares the MIS report on behalf of an operator, verify that each report is certified by the operator's anti-drug manager/alcohol misuse prevention manager or designated representative for accuracy and completeness [§199.119(f) and §199.229(d)].

Post Accident or Reasonable Cause/Suspicion Supervisor Written Record

- CDL (FMCSA)
- Pipeline (PHMSA)

Employee's Name _____ Dept. _____ Date _____

Employee SSN _____ Job Title _____ Time _____

1. EBT Breath Alcohol testing not completed within two (2) hours of the Accident or the Reasonable Cause/Suspicion situation because: *(Examples – received notification too late, Employee removed from the scene for medical treatment, EBT device not available, injuries precluded testing, Breath Alcohol Technician not available)*

2. EBT Breath Alcohol testing not completed within eight (8) hours because: *(Examples – received notification too late, Employee removed from the scene for medical treatment, EBT (device not available, injuries precluded testing, Breath Alcohol Technician not available)*

3. Urine Drug Testing not completed within 32 hours of the Accident or Reasonable Cause/Suspicion situation because:

Supervisor's Name: _____ Date: _____

Supervisor's Signature _____

Second Supervisor's Signature (if applicable) _____

***** IMPORTANT *****

The above report is required in Post-Accident or Reasonable Cause/Suspicion testing when the **test(s) times were not met.**

The written report of Post-Accident or Reasonable Cause/Suspicion testing must be completed and signed by the supervisor within 48 hours of the incident and subsequently faxed or e-mailed to the Company Designated Employer Representative (DER).

REASONABLE CAUSE/SUSPICION OBSERVATION CHECKLIST
(STRICTLY CONFIDENTIAL)

EMPLOYEE: _____ PERIOD OF EVALUATION: _____

SUPERVISOR #1, NAME AND TELEPHONE: _____

SUPERVISOR #2, NAME AND TELEPHONE: _____

This checklist is intended to assist a supervisor in referring a person for drug and/or alcohol testing. Has the employee manifested any of the following behaviors? Indicate (X) if observation and/or documentation exists.

A. QUALITY AND QUANTITY OF WORK

YES	NO	
___	___	1. Clear refusal to do assigned tasks
___	___	2. Significant increase in errors
___	___	3. Repeated errors in spite of increased guidance
___	___	4. Reduced quantity of work
___	___	5. Inconsistent, "up and down" quantity/quality of work
___	___	6. Behavior that disrupts workflow
___	___	7. Procrastination on significant decisions or task
___	___	8. More than usual supervision necessary
___	___	9. Frequent, unsupported explanations for poor work performance
___	___	10. Noticeable change in written or verbal communication
___	___	11. Other (please specify) _____

B. INTERPERSONAL WORK RELATIONSHIPS

YES	NO	
___	___	1. Significant change in relations with co-workers, supervisors
___	___	2. Frequent or intense arguments
___	___	3. Verbal/Physical abusiveness
___	___	4. Persistently withdrawn or less involved with people
___	___	5. Intentional avoidance of supervisor
___	___	6. Expressions of frustration or discontent
___	___	7. Change in frequency or nature of complaints
___	___	8. Complaints by co-workers or subordinates
___	___	9. Cynical, "distrustful of human nature" comments
___	___	10. Unusual sensitivity to advice or critique of work
___	___	11. Unpredictable response to supervision
___	___	12. Passive-aggressive attitude or behavior, doing things "behind your back"

C. GENERAL JOB PERFORMANCE

YES	NO	
___	___	1. Excessive unauthorized absences-number in last 12 months
___	___	2. Excessive authorized absences-number in last 12 months
___	___	3. Excessive use of sick leave in last 12 months
___	___	4. Frequent Monday/Friday absence or other pattern
___	___	5. Frequent unexplained disappearances
___	___	6. Excessive "extension" of breaks or lunch
___	___	7. Frequently leaves work early-number of days per week or month
___	___	8. Increased concern about (actual incidents) safety offenses involving the employee
___	___	9. Experiences or causes job accidents
___	___	10. Major change in duties or responsibilities
___	___	11. Interferes with or ignores established procedures
___	___	12. Inability to follow through on job performance recommendation

REASONABLE CAUSE/SUSPICION OBSERVATION CHECKLIST

(STRICTLY CONFIDENTIAL)

D. PERSONAL MATTERS

YES	NO	
___	___	1. Changes in or unusual personal appearance (dress, hygiene)
___	___	2. Changes in or unusual speech (incoherent, stuttering, loud)
___	___	3. Changes in or unusual physical mannerisms (gesture, posture)
___	___	4. Changes in or unusual facial expressions
___	___	5. Changes in or unusual level of activity-much reduced/increased
___	___	6. Changes in or unusual topics of conversation
___	___	7. Engages in detailed discussions about death, suicide, harming others
___	___	8. Increasingly irritable or tearful
___	___	9. Persistently boisterous or rambunctious
___	___	10. Unpredictable or out-of-context displays of emotion
___	___	11. Unusual fears or lacks appropriate caution
___	___	12. Engages in detailed discussion about obtaining/using drugs/alcohol
___	___	13. Has personal relationship problems (spouse, girl/boyfriend, children, in-laws)
___	___	14. Has received professional assistance for emotional or physical problems
___	___	15. Makes unfounded accusations toward others, i.e., has feelings of persecution
___	___	16. Secretive or furtive
___	___	17. Memory problems (difficulty recalling instructions, data, past behaviors)
___	___	18. Frequent colds, flu, excessive fatigue, or other illnesses
___	___	19. Makes unreliable or false statements
___	___	20. Unrealistic self-appraisal or grandiose statements
___	___	21. Temper tantrums or angry outbursts
___	___	22. Demanding, rigid, inflexible
___	___	23. Major change in physical health
___	___	24. Concerns about sexual behavior or sexual harassment

E. PHYSICAL INDICATORS

YES	NO	
___	___	1. Smell of alcohol on breath of person?
___	___	2. Speech: Slurred? ___
		Confused? ___
		Fragmented? ___
		Slow? ___
		Unusually soft? ___
		Unusually loud? ___
___	___	3. Disorientation: Is employee confused about;
		Where he or she is? ___
		What day it is? ___
		What time it is? ___
___	___	4. Apparent inability to focus on work?
___	___	5. Unusual or unexplained resistance to authority or refusal to follow reasonable directions?
___	___	6. Lack of motor coordination
___	___	7. Mood: Belligerent? ___
		Moody? ___
		Ecstatic? ___
		More nervous than usual? ___
		Giddy? ___
		Talkative? ___
		Drowsy? ___
___	___	8. Skin color: Pale? ___
		Flushed? ___
___	___	9. Excessive perspiration?
___	___	10. Excessive trips to the restroom?
___	___	11. Bloodshot eyes?
___	___	12. Dilated pupils?
___	___	13. Pinpoint pupils?
___	___	14. Traces of alcohol in containers?

REASONABLE CAUSE/SUSPICION OBSERVATION CHECKLIST
(STRICTLY CONFIDENTIAL)

E. PHYSICAL INDICATORS (con't)

YES	NO	
___	___	15. Confession by employee that he/she was drinking alcohol or ingesting drugs?
___	___	16. Confirmation by other employees?
___	___	17. Presence of substances with the appearance of drugs?
___	___	18. Presence of drug paraphernalia?
___	___	19. Smell of marijuana?
___	___	20. Congregation of employees in remote areas of the company's facilities or in areas not usually frequented by employees?
___	___	21. Weariness, fatigue, or exhaustion?
___	___	22. Deteriorating physical appearance?
___	___	23. Yawning excessively?
___	___	24. Blank stare or expression?
___	___	25. Sudden and/or unpredictable change in energy level?
___	___	26. Unusually energetic?
___	___	27. Shaking or trembling of hands?
___	___	28. Sunglasses worn at inappropriate times?
___	___	29. Changes in appearance after lunch break?
___	___	30. Breathing or swallowing difficulties?
___	___	31. Unusual sneezing / nasal congestion?
___	___	32. Needle marks on arms?
___	___	33. Prolonged lunch hours?
___	___	34. Tardiness?

Other information/observations (Please be specific, attach additional sheet as needed).

Additional Comments:

SUPERVISOR #1 (print name)

SUPERVISOR #2 (print name)

SUPERVISOR #1 (Signature) DATE

SUPERVISOR #2 (Signature) DATE

Instructions for Completing the PHMSA Plan

Page 1 – Cover Page

1. Type company name, company address and company phone number.
2. Implementation Date: The date that your company implemented the DOT alcohol and drug testing program.
3. Effective Date: The date that this plan became effective for your company.

Page 36 – Appendix B – Designated Personnel and Service Agents

Complete all sections.

Page 37 – Appendix C – Covered Positions

List your company's employee positions/titles. Check the check box for which the title falls under (e.g. employee or supervisor). Supervisor positions/titles would need to meet the DOT required training for reasonable cause/suspicion testing of employees. If you need to add additional pages to this Appendix, at the bottom of the page, click on "PHMSA Drug/Alcohol Plan" and additional pages will be added.

Page 38 – Appendix D – Company Disciplinary Actions and Additional Procedures

This section is populated with standard terms. You can replace this text with your own company policy of you wish. Page 39 has been left blank if you should need additional space. If you need to add additional pages to this Appendix, at the bottom of the page, click on "PHMSA Drug/Alcohol Plan" and additional pages will be added.

ELECTRICAL SAFETY AWARENESS

Revision Date: 05/2015



ELECTRICAL SAFETY AWARENESS

11.1 PURPOSE

11.1.1 The purpose of this policy is to describe ZARNAS COMPANIES expectations for training, qualifications and safe work practices working with energized equipment.

11.2 RESPONSIBILITIES

11.2.1 Supervisor

11.2.1.1 Will inform and ensure that ZARNAS COMPANIES employees and contractors are in compliance with the safe work practices defined in this policy.

11.2.1.2 Ensure that employees comply with the requirements set forth by the DOE, OSHA, NEC and other regulatory agencies.

11.2.1.3 Ensure that employees have the appropriate PPE available and use them properly.

11.2.1.4 Are adequately qualified to perform their jobs.

11.2.1.5 Determine the work each employee is qualified to perform and make work assignments accordingly.

11.2.2 Employee

11.2.2.1 Will ensure that all the safe work practices in this policy are followed at all times.

11.2.2.2 Only perform the tasks for which you are qualified.

11.2.2.3 Understand the basic principles of electricity and electrical safety.

11.2.2.4 Follow applicable OSHA requirements.

11.2.2.5 Use the proper tools and required PPE.

11.2.2.6 Request additional training to avoid working beyond your level of qualifications.

11.2.2.7 Comply with DOE, OSHA, NEC requirements and other regulatory agencies.

11.2.2.8 Avoid wearing jewelry or other conductive metals. If jewelry cannot be removed then it must be covered with a non-insulating material.

11.2.2.9 Avoid working around energized parts while heavily sweating or sweat soaked shirt.

11.2.3 Safety director

11.2.3.1 Provide support primarily through supervisory and management personnel.

11.2.3.2 Identify electrical safety hazards and make recommendations for resolution.

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- 11.2.3.3 Provide support to workers responsible for analyzing electrical accidents and incidents.
- 11.2.3.4 Evaluate electrical accidents and incidents to determine trends.
- 11.2.3.5 Develop, review and approve electrical safety training programs.
- 11.2.3.6 Interact on a continual basis with groups charged with providing a safe environment for employees. This interaction may include conducting electrical safety presentations and providing a forum for the exchange of ideas and information.
- 11.2.3.7 Inform workers of lessons learned from electrical accidents and incidents.
- 11.2.3.8 Participate in DOE electrical safety programs.

11.3 CONTROLS FOR ELECTRICAL WORK AND EQUIPMENT

- 11.3.1 Only qualified individuals are permitted to perform electrical work or equipment that has not been de-energized, for ZARNAS COMPANIES, at any time. A qualified person is considered by the company as an employee who has the required skills and knowledge to perform electrical work safely. Such individuals must be aware of the hazards associated with electrical work and the methods for reducing the risk of electrical accidents that can result from unsafe equipment, adverse environmental conditions and unsafe acts, as well as the use of insulate tools and insulating and shielding materials, PPE and special precautionary techniques.
- 11.3.2 Whenever possible, all circuits or equipment will be de-energized before beginning any work. Work on energized circuits will only be performed by authorized workers, as described in the lockout/tagout energy control program. In addition, workers will use:
 - 11.3.2.1 Proper design, fabrication, installation and documentation techniques.
 - 11.3.2.2 Proper operational and maintenance procedures.
 - 11.3.2.3 Electrical equipment approved by a nationally recognized testing laboratory (NEC).
 - 11.3.2.4 Proper PPE
 - 11.3.2.5 Portable ladders will be of non-conductive material and should not be allowed to rest directly upon electrical equipment.
 - 11.3.2.6 ZARNAS COMPANIES takes a positive approach when dealing with root causes of employee concerns, near misses and incidents involving electrical hazards.

11.4 PERSONAL PROTECTIVE EQUIPMENT

- 11.4.1 PPE is required when installing, examining, adjusting, servicing, fabricating, testing or maintaining electrical equipment. ZARNAS COMPANIES will provide employees with appropriate PPE and ensure equipment is used properly.
- 11.4.2 ANSI approved protective footwear, hard hats and insulated nonmetallic framed safety glasses will be required when performing such work.

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- 11.4.3 Rubber insulated (non-conductive) protective equipment will be visually inspected at the beginning of each work day before use and after performing work that can cause damage to PPE.
- 11.4.4 Polyester clothing or other flammable types of clothing will not be worn near electrical circuits. Cotton clothing is much less likely to ignite from arc blast. Employees working on live circuits will be provided Nomex or equivalent fire resistant (FR) clothing.
- 11.4.5 Suitable eye protection must be worn at all times while working on electrical equipment

11.5 GENERAL SAFETY RULES

- 11.5.1 All electrical equipment used in hazardous locations will be approved for Class 1, Division 1 use, as outlined in the National Electric Code (NEC) and OSHA regulations.
- 11.5.2 Electrical cords and plugs should be inspected before each use for damage and removed from service if damage is detected.
- 11.5.3 All portable equipment must be plugged into a GFCI receptacle to protect the user against shorts and current leakage.
- 11.5.4 Never carry electric tools by their cord.
- 11.5.5 Never jerk a cord to remove its plug from a receptacle.
- 11.5.6 Guard all electrical cords and plugs from damage.
- 11.5.7 The use of UL listed double insulated electric tools is encouraged.
- 11.5.8 Avoid running extension cords where they could become damaged or cause a tripping hazard.
- 11.5.9 Never stand in water when using an electrical appliance.

11.6 PROCEDURE

- 11.6.1 Employees who face a risk of electric shock but who are not qualified persons will be trained and familiar with electrically related safety practices.
- 11.6.2 While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts will be locked out or tagged or both.
 - 11.6.2.1 Conductors and parts of electrical equipment that have been de-energized but not tagged or locked out will be treated as live parts.
- 11.6.3 Employees will be trained in safety related work practices that pertain to their respective job assignments. The safe work practices will be designed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

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- 11.6.4 Employees and subcontractors must not use electrical equipment that can create sparks or be sources of ignition near flammable gases or liquids. If electrical equipment must be used in these areas, only explosion-proof or intrinsically safe equipment and tools will be used.
- 11.6.5 Electrical equipment will be suitably earthed/grounded, if not it will be double insulated.
- 11.6.6 All portable electrical distribution outlets used for hand tools will comply with OSHA standards. This will include the use of GFCIs. If GFCIs cannot be used then one or more competent person(s) must be trained and designated to carry out the electrical safety program.
- 11.6.7 No employee will use electrical equipment that does not have an electrical inspection tag attached or has exceeded its inspection date. Any employee discovering portable electrical equipment in such condition will tag equipment as *OUT OF SERVICE* and report it to the immediate supervisor.
- 11.6.8 Any equipment which has not met the requirements of this program will not be available or permitted to be used. Damaged items will not be used until repaired.
- 11.6.9 Only qualified personnel are permitted to undertake maintenance, installation and repair of electrical equipment and will follow the appropriate lockout/tagout procedure.
- 11.6.10 All electrical shocks must be reported to supervisor and the safety director for investigation.
- 11.6.11 All employees and subcontractors authorized and assigned to work on electrical circuits will be trained and prepared to perform CPR.
- 11.6.12 Mobile equipment operators will be aware of and avoid overhead power lines.
- 11.6.13 Only competent personnel are permitted to operate machinery, to start and operate electrically driven equipment and to energize or de-energize electrical circuits or switchboards.
- 11.6.14 Conductive items of clothing or jewelry will not be worn unless they are rendered non-conductive by covering, wrapping or other means of insulation.
- 11.6.15 Handling of long dimensional conductor objects requires the installation of guards, insulation and material handling techniques to minimize exposure hazards.
- 11.6.16 Protective shields, protective barriers or insulating materials will be used when working in confined or closed work spaces where electrical hazards may exist.
 - 11.6.16.1 Employees may not enter spaces containing exposed energized parts unless illumination is provided that enables the employees to work safely.
- 11.6.17 All areas where work is being performed should have barriers erected to keep unauthorized personnel out of the area. Approach distance for unqualified employees is a minimum of 20 feet.
- 11.6.18 Qualified employees see Table S5 of OSHA 1910.333(c)(3)ii) unless:
 - 11.6.18.1 The person is insulated from the energized part (gloves, with sleeves if necessary, rated for the voltage involved are considered to be insulation of the person from the energized part on which work is performed)



11.6.18.2 The energized part is insulated both from all other conductive objects at a different potential and from the person or the person is insulated from all conductive objects at a potential different from that of the energized part.

11.6.19 Work planning for near or on exposed de-energized parts ensures they are treated as live.

11.6.20 All efforts will be taken to de-energize and ground overhead lines.

11.7 ELECTRICAL EQUIPMENT CONDITIONS OF APPROVAL AND USE

11.7.1 All electrical equipment, components and conductors should be listed, labeled and UL approved for their intended purpose.

11.7.2 When building, repairing or modifying electrical systems, NEC approved equipment must be used.

11.7.3 All live electrical parts will be positively de-energized when working on or near electrical circuits, equipment, or systems. Circuits, conductors and parts of electrical equipment must be considered energized until isolated, locked out and tagged, and verified with an appropriate testing device as described in the *Lockout/Tagout Policy*. Where it is possible for the circuits to be energized by another source or where capacitive and/or inductive devices (including cables) may retain or build up a charge, circuits will be grounded and shorted.

11.7.4 Working on or near exposed energized parts applies to work performed on exposed live parts (involving either direct contact or by means of tools or materials) or near enough to them for employees to be exposed to any hazard they present.

11.7.5 Workers must follow safe work practices to prevent electric shock or other injuries resulting from direct or indirect electrical contacts when performing work near or on equipment/circuits that may be energized. Additional precautions will be followed to improve safety in the work area:

11.7.5.1 Follow established rules and procedures, including those of electrical manufacturers.

11.7.5.2 Anticipate potential electrical problems and hazards.

11.7.5.3 Identify and report to an immediate supervisor any potential electrical hazards or unexpected occurrences or incidents (ex. discharges or arcs when applying grounds to circuits thought to be de-energized), including near misses.

11.7.5.4 Do not rush to finish a job - never bypass approved procedures and work practices.

11.7.5.5 Plan and analyze for safety during each step of any electrical work.

11.7.5.6 Keep accurate records (ex. as-built designs) of all pertinent work performed.

11.7.5.7 Have significant safety-related work independently verified.

11.7.5.8 Use properly rated test equipment. Verify condition and operation before and after use.

11.7.5.9 Know applicable emergency procedures.

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- 11.7.5.10 When handling aluminum or metal tubing, ducts or piping, maintain control of the object and remain aware of the location of energized wires and parts. If it is not possible to maneuver within an area where energized parts remain with elongated objects, then another employee will be utilized to guide and direct the activity.
- 11.7.6 While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized the circuits energizing the parts will be locked out or tagged or both.
- 11.7.7 If work is to be performed under or near overhead power lines, the lines must be de-energized and grounded by the owner or operator of the lines or other protective measures must be provided before work is started.
 - 11.7.7.1 Protective measures (such as guarding or insulating the lines) must be employed to prevent employees from contacting the lines.
 - 11.7.7.2 Unqualified employees and mechanical equipment must stay at least 20 feet away from overhead power lines.
 - 11.7.7.2.1 No object that an unqualified person carries must come any closer.
 - 11.7.7.2.2 Distance limit increases by 4 inches for every 10K volts over 50K volts.
 - 11.7.7.3 Vehicular and mechanical equipment may not be operated near overhead lines by employees standing on the ground unless required clearances are met.
- 11.7.8 There are safety considerations and clearance distances applicable to vehicular or mechanical equipment, such as a manlift, that apply when working near overhead lines.
 - 11.7.8.1 Since this equipment may become energized down to the ground level, all overhead distance restrictions apply at the ground level as well.
 - 11.7.8.2 Warning signs to keep people away from any vehicle operating near overhead lines.
- 11.7.9 Qualified persons working near exposed energized overhead lines may not approach or take any object without an approved insulating handle, and get no closer to exposed energized parts than shown in the table below:

APPROACH DISTANCE FOR QUALIFIED EMPLOYEES (ALTERNATING CURRENT - A/C)	
Voltage Range (Phase to Phase)	Minimum Approach Distance
300V and less	Avoid Contact
Over 300V, but not over 750V	1 ft. 0in. (30.5 cm)
Over 750V, but not over 2kV	1 ft. 6in. (46 cm)
Over 2kV, but not over 15kV	2 ft. 0in. (61 cm)
Over 15kV, but not over 37kV	3 ft. 0in. (91 cm)
Over 37kV, but not over 87.5kV	3 ft. 6in. (107 cm)
Over 87.5kV, but not over 121kV	4 ft. 0in. (122 cm)
Over 121kV, but not over 140kV	4 ft. 6in. (137 cm)



11.7.10 A qualified person may get closer to the above voltages under the following conditions:

11.7.10.1 The person is wearing insulated gloves with the proper voltage rating.

11.7.10.2 The energized part is insulated.

11.7.10.3 Worker is insulated from all conductive objects.

11.8 EQUIPMENT INSTALLATION

11.8.1 Equipment will be free from recognized hazards and suitable for the intended service.

11.8.2 Listed or labeled equipment will be used or installed in accordance with manufacturer instructions.

11.8.3 Enclosures installed outdoors will be weatherproof. Switches, circuit breakers and switchboards installed outdoors must be installed in weatherproof enclosures.

11.8.4 Electrical enclosures will be provided with proper moisture drains per manufacturer recommendations for the service and application.

11.8.5 Each switch, fuse or circuit breaker will be legibly marked to indicate its purpose, unless located and arranged so that its purpose is evident (such as a light switch).

11.8.6 Adequate ventilation space for proper equipment cooling will be provided as per manufacturer recommendations.

11.8.7 Electrical distribution panels should never be used as a raceway or conduit. Wires going into the box should be terminated.

11.9 EQUIPMENT GUARDING

11.9.1 Parts of electrical equipment that may produce arcs, sparks or flames will be separated and isolated from flammable and combustible materials. Paper, cardboard boxes and other combustible items may not be stored near circuit breaker boxes or transformer enclosures.

11.9.2 Live parts of electrical equipment operating at 50 volts or more will be guarded against accidental contact by an approved cabinet, enclosure or one of the following methods:

11.9.2.1 Location in a locked vault or similar enclosure.

11.9.2.2 Partitions or screens so arranged as to exclude all but qualified persons.

11.9.2.3 Location at an elevation of eight feet or more above a working surface for less than 600 volts.

11.9.3 Areas containing unguarded electrical conductors at voltages over 600 volts must be protected by a vault, wall or fence. A wall or fence must have a minimum height of eight feet and all gates must be locked when there is no work in progress inside the area.

11.9.4 Suitable guards must protect electrical equipment exposed to physical damage from vehicles.



11.9.5 Lighting elements must be protected from damage from accidental contact.

11.9.6 When electrical equipment is exposed, live, and in an area accessible to non-qualified personnel, the equipment must be barricaded.

11.10 EQUIPMENT ACCESS

11.10.1 Entrance to rooms and other guarded locations containing exposed electrical equipment must be posted with appropriate warning signs.

11.10.2 Workspaces in front of electrical equipment must be at least 50 inches wide.

11.10.3 Workspaces should be provided with adequate illumination for the maintenance of electrical equipment.

11.10.4 Workspaces may not be used for storage.

11.11 WIRING DESIGN

11.11.1 All electrical equipment must have a properly sized safety equipment ground installed.

11.11.2 Conductors used as equipment grounding conductors must be distinguishable from other types of conductors and from each other. The conductors may not be gray or white in color.

11.11.3 A grounding terminal may be used for no purpose other than grounding. The path to ground from circuits, equipment and enclosures will be permanent and continuous.

11.11.4 Metal cable trays, raceways and enclosures must be grounded by an equipment grounding conductor or secured to and in electrical contact with a metal rack or structure that is grounded.

11.11.5 Over-current devices (such as fuses or circuit breakers) will be used to protect conductors and equipment from over-current.

11.11.6 Cartridge fuses and thermal fuses on circuits over 150 volts must have a disconnecting means.

11.11.7 Over-current devices should be installed where they are readily accessible and must be labeled for the circuit or equipment they protect.

11.12 TEMPORARY INSTALLATIONS

11.12.1 Except in the event of an emergency, temporary wiring may not be used for service over 600 volts.

11.12.2 Temporary wiring installations may be used only:

11.12.2.1 During repair, remodeling, maintenance or demolition of structures or equipment

11.12.2.2 For experimental or developmental work

11.12.2.3 During emergencies

11.12.3 Branch circuits must originate in an approved power outlet or panel board.

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11.12.4 Receptacles on temporary wiring system will be the grounding type and connected to an equipment grounding conductor. In addition, a ground fault circuit interrupter (GFCI) must be installed.

11.12.5 No bare conductors or earth returns may be used for wiring of any temporary circuits.

11.12.6 Flexible cords and temporary wiring must be protected against damage.

11.12.7 All non-current carrying metal parts of high voltage temporary equipment will be grounded.

11.13 GROUND FAULT CIRCUIT INTERRUPTERS (GFCI)

11.13.1 GFCIs - either circuit breakers or portable ground fault interrupting receptacles will be used for:

11.13.1.1 All 125V single phase, 15-A and 20-A receptacles within 6 feet of a sink or installed outdoors

11.13.1.2 Temporary wiring outdoors

11.13.1.3 Wherever workers are using electrical equipment around water or in damp environments

11.13.2 Unlike fuses or standard circuit breakers, which are designed to protect equipment from over-current, GFCIs are designed to protect personnel from serious injury or death. Employees are to test the working capability of GFCIs before each use, by depressing the *TEST* button on the unit. A satisfactory test of the system must be achieved prior to the use of the device.

11.13.3 This practice is to provide employees with protection from electric shock. NEC Article 210-8 specifies that GFCIs must be installed in the following locations:

11.13.3.1 Dwellings where 125V single phase; 15-A and 20-A receptacles installed outdoors.

11.13.3.2 Bathrooms, garages and crawl spaces at or below grade.

11.13.3.3 Unfinished basements.

11.13.3.4 Where receptacles on countertop surfaces are within 6 feet of a sink.

11.13.4 Exceptions to this requirement are:

11.13.4.1 Areas where receptacles are required (other than on countertops) to supply power to specific equipment (ex. receptacles dedicated to refrigerators).

11.13.4.2 Line filters and other power supply components in many electronic instruments draw sufficient capacitive current to trip a GFCI and are not designed to be connected to GFCI protected circuits. They also will not be installed in wet or damp locations.

11.14 GROUNDING CONDUCTOR PROGRAM

11.14.1 ZARNAS COMPANIES uses GFCIs, establishes and implements an assured grounding program covering all cord sets, receptacles which are not part of the building or structure and equipment connected by cord and plug which are used by employees.

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- 11.14.2 The conductor used for grounding will meet the following criteria:
 - 11.14.2.1 Be permanent and continuous
 - 11.14.2.2 Facilitate operation of the circuit's protective devices
 - 11.14.2.3 Have sufficiently low impedance to limit the voltage to ground to a safe level at all frequencies and fault-current conditions anticipated
 - 11.14.2.4 Have the capacity (size and rating) to safely conduct any fault that may be imposed on it for the time required for protective device operation
- 11.14.3 The supervisor will be designated as a competent person, as defined in 1926.32(f) for the implementation of the grounding conductor program.
- 11.14.4 A daily visual inspection will be made to determine external defects or indications of internal damage prior to use:
 - 11.14.4.1 Cord sets
 - 11.14.4.2 Attachment cap
 - 11.14.4.3 Plugs and receptacles
 - 11.14.4.4 Other cord equipment connected to cord and plug
 - 11.14.4.5 Missing grounding plug and visible cord or insulation damage
- 11.14.5 Damaged equipment will be tagged *DO NOT USE* and removed from service and either repaired and tested or discarded.
- 11.14.6 All equipment grounding conductors will be tested for continuity and be electrically continuous. Receptacle and attachment caps or plugs will be tested for correct attachments of the equipment grounding conductors.
- 11.14.7 The equipment grounding conductor will be connected to its proper terminal:
 - 11.14.7.1 Before each use
 - 11.14.7.2 Before equipment is returned to service following any repairs
 - 11.14.7.3 Before equipment is used such as when a cord has been run over
 - 11.14.7.4 At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage will be tested at intervals not exceeding 6 months.
- 11.14.8 Do not use equipment that has not been inspected and in proper working order on any jobsite.
- 11.14.9 ZARNAS COMPANIES will not make available or permit the use by employees of any equipment which has not met the requirements of this policy.



11.14.10 Tests performed as required by this program will be recorded as to the identity of each receptacle, cord set and cord and plug connected equipment that passed the test and will indicate the last date tested or interval for which it was tested. This record will be kept by means of logs, color coding or other effective means and will be maintained until replaced by a more current record. These records will be made available at the jobsite for inspection by the assistant secretary.

11.14.11 This policy including the specific procedures adopted by ZARNAS COMPANIES will be available at the jobsite for inspection and copying.

11.15 PORTABLE ELECTRICAL TOOLS, EQUIPMENT AND INSTRUMENTS

11.15.1 Portable electrical equipment or tools will always be inspected to identify defects.

11.15.2 Defective equipment will be removed from service immediately.

11.15.3 Portable electric equipment will be connected to a portable GFCI (or circuit that contains a GFCI) when used outdoors, in damp locations, in any unsafe environment or for outdoor construction. Equipment which meets the requirements of this program will be used.

11.16 STATIC ELECTRICITY

11.16.1 A static charge is an imbalance of electron on objects (matter) that can build up on all matter and transfer from one object to another by conduction or induction. The discharge can cause shock, fire or explosion. It is not normally physically hazardous and therefore not considered reportable as electric shock. It should be noted, however, that injuries may result from reaction to shock.

11.16.2 When working with electrical equipment, employees will follow the guidelines below for their own protection and that of the equipment:

11.16.2.1 Grounding of the metal parts or enclosures will continuously discharge static. Grounding prevents the wrist strap from becoming a shock hazard in the event of a short circuit from a voltage to the wrist strap conductor.

11.16.2.2 Bonding will equalize the potential between two adjacent non-current carrying metal parts or enclosures. Only approved or listed grounding clamps are acceptable for static bonding and grounding. Alligator clamps are not acceptable.

11.16.2.3 Dust is attracted to the face of the video display terminal because of static charge of approximately 25K volts. Never clean the glass face of a computer monitor while the computer is on. When a person touches the screen with a finger, the charge in the portion of the screen touched discharges through the finger with a tiny spark. When cleaning a monitor, the entire glass is wet and the charge on the entire screen will discharge to a finger or hand causing a much more painful shock.

11.16.2.4 Never allow any electrical powered office equipment to become wet while it is turned on and never turn on any electronic equipment when it is wet. Even when a computer is turned off for few minutes, it is best not to touch the monitor's CRT while handling or using other electronic equipment including the telephone.



- 11.16.3 Static electricity can ignite flammable vapor sources if the following conditions exist simultaneously:
 - 11.16.3.1 Generation of a static charge imbalance.
 - 11.16.3.2 Static charge accumulation.
 - 11.16.3.3 Flammable atmosphere.
 - 11.16.3.4 A spark with significant ignition energy or temperature.
- 11.16.4 Electrostatic charges can be generated by the movement of liquid through pipes, funnels, pumps, filters or by free-flowing through air. Static charges generated by flowing liquids can be reduced or eliminated by bonding or grounding or both by lowering the flow rate or by reducing the amount of misting, spraying, free fall and splashing of the liquid. Static charge from the liquid can store hazardous quantities of electrical energy in a capacitor over time. This hazard is most likely to occur when filling electronic apparatus tanks with insulating oil.

11.17 CONDUCTIVE MATERIALS AND EQUIPMENT

- 11.17.1 Conductive material and equipment that are in contact with any part of an employee's body will be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts.
- 11.17.2 If an employee must handle long dimensional conductive parts in areas with exposed live parts, ZARNAS COMPANIES will institute work practices which minimize the hazard.
- 11.17.3 Portable ladders will have non-conductive side rails if they are used where the employee or the ladder could contact exposed energized parts.
- 11.17.4 Conductive articles of jewelry and clothing may not be worn if they might contact exposed energized parts. Such articles may be worn if they are rendered non-conductive by covering wrapping or other insulating means.

11.18 EMERGENCY RESCUE

- 11.18.1 Signs of electric shock
 - 11.18.1.1 Obvious serious injury (ex. loss of consciousness, significant trauma).
 - 11.18.1.2 Altered mental status (ex. confusion, slow/slurred speech).
 - 11.18.1.3 Other obvious injury (ex. laceration, muscle strain, burn).
- 11.18.2 Call 9-1-1
- 11.18.3 Qualified employee ensures potential energy sources are safe and in a neutral state.
- 11.18.4 Initiate cardiopulmonary resuscitation (CPR), if appropriate. Only trained personnel should perform this procedure.

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- 11.18.5 Notify the victim's supervisor and the appropriate customer representative as soon as possible if not done already.
- 11.18.6 Properly secure the area once the victim is under care, leaving items and equipment in the same position as much as possible. Try to remember the original position of items that may have been moved during response to the accident.
- 11.18.7 Record the time, date and location of the accident, name of victim and witnesses, who was notified, voltage and current, the contact parts of the body, what equipment or system was being serviced, shock reaction and duration of the shock.

11.19 RECORDKEEPING

- 11.19.1 Tests conducted according to this procedure will be recorded, showing the following information:
 - 11.19.1.1 Identity of each receptacle, cord set and cord and plug connected equipment.
 - 11.19.1.2 Information will be documented with *Inspection Log* sheets kept at the jobsite and available for inspection by the assistant secretary and any affected employees.
 - 11.19.1.3 Equipment tested and found in compliance with this procedure will be identified by a tag, which shows the following information:
 - 11.19.1.3.1 Date of inspection
 - 11.19.1.3.2 Name of inspector

11.20 TRAINING

- 11.20.1 Non-electrical workers whose job assignments require them to be close to exposed parts of electrical circuits operating at 50 V or more, will be trained accordingly:
 - 11.20.1.1 The proper handling of portable tools and appliance cords.
 - 11.20.1.2 Procedures for resetting over-current protective devices.
 - 11.20.1.3 Techniques for approaching distances to overhead conductors.
 - 11.20.1.4 The meaning of electrical safety warnings and barriers.
 - 11.20.1.5 Electrical hazards associated with water.
 - 11.20.1.6 The proper response to electric shock.

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EMERGENCY ACTION PLAN

12.1 PURPOSE

12.1.1 The purpose of this policy is to ensure employee safety from fire and during other emergencies. This policy provides minimum procedures to prepare emergency action plans. Specifics as to signals, communications, evacuation routes and assembly points must be developed locally, publicized and coordinated according to site specific plans. Emergency action plans must be in place for all employees to review. Jobs with ten or less employees plan will be provided and communicated orally.

12.2 RESPONSIBILITIES

12.2.1 Employee

12.2.1.1 Follow elements of this policy while onsite at company facilities

12.2.1.2 Report all incidents to the proper authorities in a timely manner

12.2.1.3 Employees must receive training on the site emergency evacuation procedure and execute their assigned emergency response duties accordingly

12.2.1.4 Employees must participate and respond appropriately in any emergency drills affecting their worksite

12.2.2 Foremen

12.2.2.1 Receive training on this policy

12.2.2.2 Execute assigned emergency response duties according to site requirements

12.2.2.3 Ensure workers are trained and understand proper response actions to take in the event of a fire or other emergency

12.2.3 Safety director

12.2.3.1 Ensure emergency exits are clearly identified in the office, shop and warehouse and firefighting and emergency equipment is available and in good condition.

12.2.3.2 Maintain items such as first aid kits, drinking water, flashlight, portable battery-powered radio and batteries, fire extinguishers, wrench to shut off the main gas valve, pry bars, axes, saws, tools or similar devices for employee rescue.

12.2.3.3 Create a facility map designating all emergency evacuation routes and the locations of all firefighting equipment and emergency supplies and equipment. These maps will be posted in at least two locations in the facility.

12.2.3.4 Train all exposed employees on the procedures to be followed in the event of fire or other emergency including how to properly notify other affected employees.

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- 12.2.3.5 Identify potential fire hazards in the office, shop and warehouse and ensure adequate steps are taken to prevent fires.
- 12.2.3.6 Ensure that combustible trash and materials are removed promptly from the facility and that all flammable and combustible liquids are properly stored and handled.
- 12.2.4 Senior ZARNAS COMPANIES employee (emergency scene commander)
 - 12.2.4.1 Maintain overall command of a workplace emergency.
 - 12.2.4.2 Assess incidents to determine if it is necessary to order emergency response.
 - 12.2.4.3 Supervise emergency scene coordinators' activities during an emergency.
 - 12.2.4.4 Direct shutdown of critical workplace equipment or operations.
 - 12.2.4.5 Determine if an evacuation is necessary and manage an evacuation.
 - 12.2.4.6 Coordinate activities of responders such as ambulance, police and fire departments.
 - 12.2.4.7 The emergency scene commander will be an employee who has experience managing others, assessing complex events and making effective decisions under difficult circumstances.
- 12.2.5 Emergency scene coordinators
 - 12.2.5.1 Coordinate other employee activities during an emergency (guiding them to appropriate exits and safe areas during an evacuation) and for other emergency response tasks for which they have volunteered and been properly trained.
 - 12.2.5.2 Responsible for no more than 20 employees within a designated work area.
 - 12.2.5.3 Respond to all emergencies identified in emergency plan, evacuation procedures for the particular workplace and how to use emergency communication equipment.
 - 12.2.5.4 CPR/AED certified
 - 12.2.5.5 Check rooms and other enclosed spaces for employees who may be trapped or unable to evacuate during an emergency.
 - 12.2.5.6 Know who may need assistance during an evacuation and how to assist them.
 - 12.2.5.7 Coordinate the emergency activities of employees.
 - 12.2.5.8 Ensure that employees understand how to respond to workplace emergencies.
 - 12.2.5.9 Know the workplace layout, appropriate escape routes and areas that employees must not enter during an evacuation.
 - 12.2.5.10 Verify that employees are in designated safe areas after an evacuation.

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12.3 HAZARD IDENTIFICATION ASSESSMENT

- 12.3.1 ZARNAS COMPANIES will conduct hazard identification and assessment for all operations, site specific conditions and job specific duties where the safety of workers, the general public and the environment may be at risk and the need to rescue or evacuate workers may arise. ZARNAS COMPANIES will assess the probability and consequences connected with hazards arising from human activities, technological events and natural perils.
- 12.3.2 ZARNAS COMPANIES will assess the risks posed by hazardous substances from accidental release, fire or other such emergency.
- 12.3.3 Emergency response plans will be developed prior to any work being undertaken by company personnel. Site specific emergency response plans will be developed in conjunction with the emergency response plan of our client or other service companies active on the worksite.
- 12.3.4 Engineering controls and/or operational changes throughout the life of the plan or company that may have an effect on emergency response procedures must also be identified and reflected in plan maintenance and implementation procedures.

12.4 POTENTIAL EMERGENCIES

- 12.4.1 An emergency is an incident that results in (or has the potential to result in) injury or loss of life, that poses a threat to the safety of personnel or the general public or a situation that may cause environmental damage or significant loss or damage to company or personal property.
- 12.4.2 Potential emergencies may be:
 - 12.4.2.1 A fatality or life-threatening injuries
 - 12.4.2.2 Transportation accidents
 - 12.4.2.3 Fires and explosions
 - 12.4.2.4 Major damage to company property or equipment
 - 12.4.2.5 Significant hazardous product release or other chemical spill, which may be harmful to personnel or environment, including toxic gas releases or leaks (ex. H₂S or SO₂)
 - 12.4.2.6 Security-related incidents involving issues such as theft, extortion, bomb threats, hostage taking or ransom situations
 - 12.4.2.7 Natural occurrences such as severe weather (ex. tornadoes or thunderstorms)
 - 12.4.2.8 Business interruptions involving loss of process, product or communication tools as a result of utility failures, worksite violence, civil unrest or laborer disruption, etc.
 - 12.4.2.9 Multi-hazard emergencies (ex. natural gas line rupture causes explosion and injury)
 - 12.4.2.10 Terrorism (ex. cyber-terrorism, chemical, biological, or nuclear terrorism)

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12.4.2.11 Third-party or public involvement having an immediate impact on company's image

12.5 GENERAL CONSIDERATIONS

- 12.5.1 This evacuation procedure must be widely publicized and posted throughout the project.
- 12.5.2 All personnel must know exactly what action to take in the event alarms sound other than on the test times.
- 12.5.3 One person must be assigned to each assembly point to make a head count.
- 12.5.4 A monitor should gather all lists from assembly points and report to the emergency scene coordinators.
- 12.5.5 No effort should be made to re-enter evacuated areas to locate missing persons until an *all clear* is sounded. No person should leave the property unless told to by responsible authorities.
- 12.5.6 Contact the safety director if additional assistance required. In the event of emergency employees will be alerted by three consecutive air horn blasts or oral communications unless otherwise specified in site specific training.

12.6 REPORTING

- 12.6.1 To report a possible emergency evacuation situation, notify a supervisor. The supervisor will contact the senior ZARNAS COMPANIES employee who will sound the emergency alarm if necessary, unless jobsite requirements give that authority to another non-company representative.
- 12.6.2 In a failed attempt to reach a supervisor or under the direction of the supervisor, call 9-1-1.
- 12.6.3 Fires are generally not reported to fire departments by fire alarms. Most fire alarms warn only occupants. The senior ZARNAS COMPANIES employee will stay in a safe location to oversee and relay relevant information to emergency responders.

12.7 INCIDENT MANAGEMENT SYSTEM

- 12.7.1 The policy is modeled on the *Incident Management System (IMS)* used by fire, police and emergency medical service responders that consists of volunteer employees trained to respond to any workplace emergency.
- 12.7.2 It provides for overall command and control of any emergency incident. It improves communication between IMS personnel and the fire, police and medical personnel who respond to a call for help. It also provides appropriate emergency assistance during the first few minutes it takes for emergency responders to arrive.
- 12.7.3 This network is part of a larger incident management system that can respond to an emergency and accomplish the following:
 - 12.7.3.1 Identify, locate and determine the extent of the emergency.
 - 12.7.3.2 Determine the resources necessary to manage and control the emergency.

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- 12.7.3.3 Coordinate, command and control responsibilities between police and fire department, medical service providers, government agencies and onsite responders.
- 12.7.3.4 Establish and maintain communication between onsite emergency responders and other emergency service providers.
- 12.7.3.5 Provide for the safety of victims.

12.8 CHAIN OF COMMAND/EMERGENCY CONTACT LIST

- 12.8.1 The chain of command links one person with overall responsibility for managing an emergency to others responsible for carrying out specific emergency response. It establishes who is in charge and ensures that everyone in the chain responds to emergencies in an organized way.
- 12.8.2 The established chain of command minimizes confusion during an emergency and helps ensure that responders manage an emergency in the most efficient way possible.
- 12.8.3 The senior ZARNAS COMPANIES employee (emergency scene commander), a trained employee who has overall responsibility for managing emergencies.
- 12.8.4 For offsite locations, outside services that can provide assistance in the event of an emergency should be identified and reviewed with workers prior to commencing work activities.
- 12.8.5 A communication protocol must be established with regard to emergency notification protocol, command structure, emergency assembly areas and evacuation procedures.
- 12.8.6 An emergency response strategy or procedure is a plan that outlines the responsibilities and actions of individuals in the event of an emergency situation occurring.

12.9 EMERGENCY RESPONSE PROCEDURES

- 12.9.1 Employees are encouraged to leave the work areas on their own and go to a safe area if unsure as to whether the emergency calls for an evacuation or not. Do not hesitate. Begin the emergency response process immediately. The degree or level of the emergency is not always easily determined. Excitement at the scene may need to be countered with a simple step-by-step approach to handle such an occurrence.
- 12.9.2 Communication takes place when the alarm goes off. It is verbal through telephone calls, either land line, cell phone or satellite, dependent upon the method available at the worksite.
- 12.9.3 Non-emergency radio traffic must be stopped once an emergency is declared.
- 12.9.4 In an extreme emergency situation, it may be necessary to quickly evacuate the facility (or worksite) to a designated area. Owner controlled pre-established evacuation procedures will supersede this procedure in these circumstances.
- 12.9.5 Always do the following:
 - 12.9.5.1 Report emergencies.

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- 12.9.5.2 Inform the emergency chain of command of an emergency.
- 12.9.5.3 Warn employees about an emergency.
- 12.9.5.4 Conduct an orderly, efficient workplace evacuation.
- 12.9.5.5 Assist employees with disabilities or injuries during an evacuation.
- 12.9.5.6 Shut down critical equipment, operate fire extinguishers and perform other essential services during an evacuation. Essential operations may include such activities as monitoring power supplies, water supplies and other essential services that cannot be shut down for every emergency alarm.
- 12.9.5.7 Employees will group together with their crews and check in with their supervisor immediately after evacuation. Supervisors will account for employees at a designated safe area after an evacuation.
- 12.9.5.8 Perform rescue and first aid that may be necessary during an emergency.
- 12.9.6 Minimize damage onsite. If the potential for more injury or damage exists, assess the nature of the threat and, if possible, take immediate action to minimize those dangers.
- 12.9.7 As soon as possible after the evacuation and as often as deemed safe and necessary during the evacuation, the senior ZARNAS COMPANIES employee, safety director and other site management personnel will make or direct a complete inspection of the facility (or worksite) to ensure that it is safe from the threats posed by the original evacuation hazard or unattended equipment left by evacuated employees.
- 12.9.8 Employees will stay out of the evacuated area until the all clear signal is given. Employees will be informed of the evacuation procedure for the all clear signal.

12.10 ONSITE EMERGENCY PROCEDURES

- 12.10.1 Stop all work
- 12.10.2 Assess the situation. Consider the following:
 - 12.10.2.1 Is there an injury, a fire, a spill or a leak?
 - 12.10.2.2 What are the weather conditions?
 - 12.10.2.3 What is the terrain like?
 - 12.10.2.4 Who/what is at risk: people, property, or the environment?
 - 12.10.2.5 What actions should be taken: Is an evacuation necessary?
 - 12.10.2.6 Is diking necessary? What resources are required and readily available?
 - 12.10.2.7 What can be done immediately?

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- 12.10.3 Sound the alarm
- 12.10.4 Extinguish all possible sources of ignition
- 12.10.5 Shut down all gas, diesel or electrical equipment being used
- 12.10.6 Close any water, gas or air valves that supply equipment
- 12.10.7 Follow the appropriate emergency procedures
- 12.10.8 For fixed operations (branch, corporate and satellite offices) the corporate safety director will provide a sample *Emergency Action Plan* document that can be customized by each location.

12.11 OFFSITE EMERGENCY PROCEDURES

- 12.11.1 In the case of an offsite emergency, the person in charge will be the senior ZARNAS COMPANIES employee onsite.
- 12.11.2 If an evacuation is called for, all ZARNAS COMPANIES personnel must report to the designated muster station (to be determined for each site). A head count will be conducted to determine if anyone may have been left behind.
- 12.11.3 A list of emergency phone numbers will be kept in company vehicles and offices. 9-1-1 will be the main emergency contact. Cell phones are primary method of communication. After the emergency has been assessed and emergency services have been called for and administered, ZARNAS COMPANIES management is to be notified, if not already onsite.
- 12.11.4 If rescue efforts are required, they should be led by local authorities. If local services are unavailable, qualified onsite personnel with proper training will conduct rescue. Safety of the rescue crew is paramount.
- 12.11.5 Any inquiries by the media or general public must be directed to the senior ZARNAS COMPANIES employee or host facility contact person onsite.

12.12 SERIOUS INJURY

- 12.12.1 The person discovering the injury will call for certified first aid responder, if available.
- 12.12.2 Assess the scene. Ensure that the hazard is dealt with prior to dealing with the injured worker. The safety of the rescue team is the priority.
- 12.12.3 Determine the degree of the injury and call for emergency help if necessary.
- 12.12.4 Perform basic first aid, as needed.
- 12.12.5 Keep the injured worker warm, minimize any bleeding, regularly check the level of victim consciousness and reassure the victim while en route to medical facilities.
- 12.12.6 If required, the patient can be transported to local medical facilities, if deemed safe to move.

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12.12.6.1 If the worksite is in a remote location that may take more than 30 minutes or more for an ambulance to arrive, an industrial EMS provider will be on scene during the operation or at least during critical operations.

12.12.7 Designate someone to wait at the entrance for EMS personnel.

12.12.8 If transport is not possible or there is a concern that the injury may be worsened, emergency transport must be arranged.

12.12.9 The project manager or his designate will inform the regulatory authorities, as required.

12.12.10 In the case of serious incidents or injuries, no one is to disturb the incident scene except to:

12.12.10.1 Attend to persons injured or killed.

12.12.10.2 Prevent further injury.

12.12.10.3 Protect the public, the environment or further damage to property.

12.13 FIRE

12.13.1 All employees will participate in the fire, escape and/or other emergency programs that are put in place. The fire escape plan, which outlines designated exits and meeting areas, is posted on the walls throughout the building. Once outside, a head count will be done to ensure that everyone is outside and accounted for. All new employees will be made aware of the fire escape plan and meeting locations during orientation.

12.13.2 The person discovering a fire must inform nearby workers of the situation. Call 9-1-1 and arrange for appropriate fire personnel to respond. If external firefighters are called for, a person should be designated to meet them and lead them to the fire.

12.13.3 If employees are trained in incipient firefighting, they should attempt to control the fire using handheld fire extinguishers and fire hose, as necessary.

12.13.4 Depending on the location, firefighting resources and circumstances, the fire may be deemed to be *out of control* at a point in time. If deemed *out of control*, the safety of the firefighters must be assessed and an evacuation to a muster station may be required.

12.13.5 After an evacuation, employees will not re-enter the area until determined safe by the emergency scene commander or emergency services personnel.

12.14 EXPLOSION

12.14.1 Any workplace that handles, stores or processes flammable gases, liquids and solids is vulnerable. Explosions offer no warnings, causing disorganization and panic.

12.14.2 Try to establish communication with senior ZARNAS COMPANIES employee.

12.14.3 Assess damage to the workplace and estimate human casualties.

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- 12.14.4 Administer first aid if it is safe to do so.
- 12.14.5 Do not use elevators.
- 12.14.6 Evacuate following established procedures.

12.15 SPILL

12.15.1 A spill is a release of dangerous goods that represents a danger to health, life, property or environment. It may also involve an incident in which a bulk tanker is damaged, a release of infectious substances or radioactive material or a product released from containment as a result of a fire or explosion involving dangerous goods.

12.15.2 If workers control a release of a hazardous substance, perform cleanup of a spill or carry out testing before re-entry, ZARNAS COMPANIES will provide:

12.15.2.1 Adequate written safe work procedures. See *Spill Response Plan*.

12.15.2.2 Appropriate personal protective equipment, which is readily available to workers and is adequately maintained.

12.15.2.3 Materials or equipment necessary for control and disposal of hazardous substance.

12.15.3 Notify

12.15.3.1 Inform the senior ZARNAS COMPANIES employee

12.15.3.2 9-1-1

12.15.3.3 24 hour emergency phone number

12.15.3.4 Owner of the vehicle if other than ZARNAS COMPANIES

12.15.3.5 Shipper or owner of the dangerous goods

12.15.3.6 Inform nearby workers of the situation and secure the area

12.15.3.7 Assess the spilled material by consulting the SDS

12.15.3.8 If the spill is an airborne flammable vapor or a toxic liquid, an emergency evacuation may be necessary

12.15.3.9 Contact emergency personnel

12.15.3.10 When safe to do so, contain the spill and commence cleanup

12.15.3.11 The senior ZARNAS COMPANIES employee or appropriate regulatory authorities must approve re-entry into the air after an emergency of this nature.

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12.16 WEATHER RELATED EVENT

- 12.16.1 Tornadoes, lightning and floods may be the cause of weather related worksite emergencies.
- 12.16.2 Worksites with offices will have a means to assure they are provided with as much advance warning of adverse weather conditions as possible (ex. weather radio providing information regarding severe weather warnings issued by the National Weather Service).
- 12.16.3 The safety director is responsible for maintaining up-to-date information regarding approaching storms. They will provide adequate warning to allow the appropriate individuals to secure the equipment and materials under their jurisdiction.
- 12.16.4 Wait for instructions - a power failure will slow communication.
- 12.16.5 Tune a battery powered radio to a station that broadcasts local news.
- 12.16.6 Do not evacuate the workplace unless ordered to do so.
- 12.16.7 Senior ZARNAS COMPANIES employee will follow instructions of local authorities and the weather service so necessary precautions can be taken in the event of severe weather.

12.17 LIGHTNING

- 12.17.1 As soon as lightning is seen or thunder is heard, work should be suspended immediately.
- 12.17.2 The average distance between successive lightning flashes is about two to three miles, which means that risk is present whenever lightning can be seen or thunder can be heard.
- 12.17.3 There is a systematic plan for monitoring weather. The weather forecast will be closely followed throughout the day prior to any work. If anyone hears thunder or sees a lightning strike, appropriate action should begin. If lightning is imminent or a thunderstorm is approaching, all personnel should evacuate to a safe structure. A list of the closest safe structures should be announced or displayed on placards at all jobsites.
- 12.17.4 The ideal safe structure is a fully enclosed building with plumbing, telephone and electrical service, which aid in grounding. An enclosed automobile or truck with all windows rolled up is a reasonable shelter, although care must be taken to avoid contact with any metal inside the vehicle. The metal frame and roof, not the rubber tires, dissipate the current around the vehicle.
- 12.17.5 If a suitable safe shelter is not available, it is best to avoid tall objects (trees, light poles, etc.) that allow lightning an easy path to the ground. It is important to avoid being the tallest object. In an open field, workers should crouch with their legs together, the weight on the balls of their feet, arms wrapped around their knees and head down with their ears covered. The worker should minimize contact with the ground and should NOT lie flat.
- 12.17.6 People who have been struck by lightning do not carry an electric charge. Therefore, it is safe to perform CPR, if needed. Ideally, injured persons are moved into a safe shelter. Lightning strike victims who show signs of cardiac or respiratory arrest need emergency help.

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- 12.17.7 ZARNAS COMPANIES follows the 30 minute rule when making return to work decisions. After the last flash of lightning is witnessed or last thunder clap is heard, it is recommended to wait at least 30 minutes before resuming work. Given the average rate of thunderstorm travel, the storm should move 10 to 12 miles away from the area, reducing the risk of local lightning strike. Any subsequent lightning strike or thunder after the beginning of the 30 minute count should reset the timer and another countdown should begin.
- 12.17.8 The lightning safety plan needs to be reviewed and practiced periodically. It must include a systematic approach for monitoring local weather activity and recognizing signs of nearby danger (thunder and lightning strikes). Criteria for suspension and resumption of work should be clear. Appropriate safe shelters for each location should be clearly identified.

12.18 BUILDING/SITE EVACUATION

- 12.18.1 In the event of an emergency at a worksite requiring an evacuation, such as a fire, all work must cease immediately.
- 12.18.2 Two emergency assembly areas will be identified in advance of any site specific operations. These emergency assembly areas will be upwind and beyond the hazardous area. Changes in wind direction and other weather conditions must be taken into account while determining the emergency assembly areas. Prior to conducting operations, these emergency assembly areas will be made known to those onsite.
- 12.18.3 An evacuation order must be ordered by the senior ZARNAS COMPANIES employee.
- 12.18.4 When evacuation is deemed necessary, employees (including the first aid responder) will be notified of the nature and location of the emergency.
- 12.18.5 Workers will safely evacuate and leave the building or worksite by the nearest exit or as advised.
- 12.18.6 When evacuating worksites, employees should close doors behind them. Employees working with electrically operated machines or equipment should switch the equipment off or unplug it prior to leaving the worksite.
- 12.18.7 Once out of the area, do not smoke.
- 12.18.8 Regardless of the exit used, employees will gather at a pre-designated safe area which is upwind and safe from smoke and gases. A head count must be conducted to account for all workers.
- 12.18.9 The senior ZARNAS COMPANIES employee or safety director must then notify the fire department or other emergency responders and adjacent worksites or residences that may be affected if the risk of exposure to a substance extends beyond the worksite.
- 12.18.10 After the evacuation is complete, no one will re-enter the building until advised by the senior ZARNAS COMPANIES employee or the onsite emergency services personnel.
- 12.18.11 Notification of the public must be in conformity with the requirements of other jurisdictions, including provincial and municipal agencies.

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12.19 WORKPLACE VIOLENCE

- 12.19.1 Threats of violence may be delivered in any form: face to face, e-mail, and phone or in writing. Threats can be directed toward the worksite or toward a specific person. Police departments, mental health professionals and employee assistance counselors offer prevention information, security inspections and employee training that help reduce the risk of workplace violence.
- 12.19.2 Take all bomb threats seriously. Do not use fire alarms or phones in the building – they generate radio waves that could trigger a bomb. If someone finds a package that may be a bomb, they should note its size, shape and whether it emits a sound and notify the senior ZARNAS COMPANIES employee. Call 9-1-1 from outside the building to report the emergency and determine if an evacuation is necessary. Use a communication method that does not generate radio waves to order the evacuation.
- 12.19.3 Activate a silent alarm if your worksite has one.
- 12.19.4 Isolate the threatening person if it is possible to do so safely.
- 12.19.5 Consider offering threat management training to emergency scene coordinators and if appropriate, members of quick response teams.
- 12.19.6 The devastating effects of terrorist acts have changed the perception of a secure workplace and added a new dimension to emergency planning. What distinguishes terrorist acts is the use of threats and violence to intimidate or coerce.

12.20 EQUIPMENT INCIDENT

- 12.20.1 Trained employees should render first aid to those injured if it can be done safely.
- 12.20.2 The senior employee should immediately notify the owner of the equipment, if not ZARNAS COMPANIES property.
- 12.20.3 Keep away from the accident scene and keep others away. Do not make contact with hazardous materials unless properly trained to do so.
- 12.20.4 Secure the area to the best of your ability and wait for the safety director or other designated personnel to begin incident investigation procedures.

12.21 ALARMS

- 12.21.1 Always sound the alarm when an emergency exists. Ensure that all individuals at the worksite are familiar with it and will recognize what it means when they hear it.
- 12.21.2 Employees will be notified of emergencies through alarms, emergency horn or direct voice communication. The alarm system will be distinctive and recognizable as a signal to evacuate the worksite or perform actions designated under the emergency action plan.
 - 12.21.2.1 For worksites with 10 or fewer workers, direct voice communication is an acceptable procedure for sounding the alarm provided all employees can hear the alarm.

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- 12.21.3 In the event of an emergency, employees are expected to evacuate the premises immediately. The safety director may assign employees the task of shutting off gas or electricity, if needed. At no time will employees jeopardize their own safety to do this.

12.22 EXITS

- 12.22.1 An essential part of our emergency plan is an evacuation diagram – a floor plan of the facility or worksite that shows evacuation exits and describes the emergency evacuation procedure. Mark the exit routes and the roll call assembly area on the diagram so they are easy to see.
- 12.22.2 ZARNAS COMPANIES requires a primary evacuation exit and an alternate exit. Diagrams will be posted that show the evacuation routes and exits where employees will see them. Exits and exit routes will be identified. Characteristics of exits include:
 - 12.22.2.1 Clearly marked, well lit and visible under emergency conditions. Install *EXIT* signs using plainly legible letters.
 - 12.22.2.2 Wide enough to accommodate employees during an evacuation.
 - 12.22.2.3 Unobstructed and clear of debris at all times. Keep exit routes free of highly flammable materials, equipment or other obstructions.
 - 12.22.2.4 Unlikely to expose employees to other hazards.
 - 12.22.2.5 Always keep the line of sight to exit signs clearly visible.
 - 12.22.2.6 Exits must be separated from the worksite by fire resistant materials – that is, a one-hour fire resistance rating if the exit connects three or fewer stories and a two hour fire resistance rating if the exit connects more than three floors.
 - 12.22.2.7 Exits can only have openings necessary to allow access to the exit from occupied areas of worksite or to exit discharge. Openings must be protected by a self-closing, approved fire door that remains closed or automatically closes in an emergency.
 - 12.22.2.8 Ensure that exit routes are free and unobstructed by materials, equipment, locked doors or dead end corridors.
 - 12.22.2.9 Provide lighting for exit routes adequate for employees with normal vision.
 - 12.22.2.10 Keep doors free of decorations or signs that obscure their visibility of exit routes.
 - 12.22.2.11 Post signs along the exit access indicating the direction of travel to the nearest exit and exit discharge if that direction is not immediately apparent.
 - 12.22.2.12 Mark doors or passages along an exit access that could be mistaken for an exit. *Not an Exit* or with a sign identifying its use.
 - 12.22.2.13 Maintain exit routes during construction, repairs or alterations.

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12.22.2.14 Exit routes are arranged so employees will not have to travel toward a high hazard area unless the path of travel is effectively shielded from the high hazard area.

12.23 RESCUE

12.23.1 ZARNAS COMPANIES will ensure that designated rescue and emergency workers are trained in emergency response appropriate to the worksite and potential emergencies identified.

12.23.2 If there is not a nearby emergency clinic or hospital that will admit victims of emergencies from our worksites then the senior ZARNAS COMPANIES employee will ensure that members of onsite personnel have appropriate first aid training and supplies.

12.24 EQUIPMENT

12.24.1 ZARNAS COMPANIES must provide designated workers with personal protective clothing and equipment appropriate to the worksite and the potential emergencies identified.

12.24.2 Workers who respond to an emergency must wear and use personal protective clothing and equipment appropriate to the worksite and the emergency.

12.24.3 Emergency response equipment must be identified in the plan and be regularly inspected and maintained in a state of readiness. Inspection and maintenance records will be retained.

12.24.4 Identify emergency related hazards for which PPE may be necessary (ex. those responding to medical emergencies need protection from bloodborne pathogens).

12.24.5 Determine which PPE will protect users from the hazards. (ex. latex gloves and face shields may be necessary to protect responders from bloodborne pathogens)

12.24.6 Determine who will use the equipment. It is critical that the equipment fit the user and not cause allergic reactions or other health problems.

12.24.7 Determine the conditions under which responders will use the equipment. The equipment must not fail under those conditions.

12.24.8 Ensure that emergency responders know how to use the equipment. Whether they are wearing hard hats or atmosphere supplying respirators, responders will know how and when the equipment will protect them and when it will not protect them. Responders will know how to wear, use and maintain the equipment and how to discard contaminated equipment.

12.25 PLAN MAINTENANCE AND DISTRIBUTION

12.25.1 Emergency action planning is a process that requires continuous adjustments to take into account factors such as operational, organizational, personnel and regulatory changes and lessons learned from real life events or exercises. This and any site specific emergency response plan is regularly maintained to reflect its accuracy and up-to-date information specific to relevant hazards, response procedures and personnel.

12.25.2 In addition to annual reviews and reviews done when circumstances at the worksite change, a review and evaluation process will also take place after an emergency to ensure that critical

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components of the overall emergency response are reviewed and evaluated in order to allow for continuous improvements to the program.

- 12.25.3 This emergency response is developed in coordination with ZARNAS COMPANIES management and key responding personnel and will be distributed to all those involved in administration and response procedures within the plan. This emergency response plan will be available at all worksites and available to employees for review.
- 12.25.4 The name or job title of every employee who may be contacted by employees who need more information about the plan or an explanation of their duties under the plan.

12.26 FATALITY NOTIFICATION AND NEWS MEDIA

- 12.26.1 Notification should be made in person by the most senior ZARNAS COMPANIES employee available. If possible, an emergency scene coordinator should be present during the notification. It is advisable to check with the local police before notification is attempted, as they have specialized departments who will also be attempting that function. Under no circumstances will the name of any accident victim be released to the public before the next of kin are notified.
- 12.26.2 Do not release the names of deceased or seriously injured workers to any non-essential organization or person. ZARNAS COMPANIES employees should not make any statement to non-company personnel that would in any way deal with fault or liability. Only company officials will issue statements to the press or media.
- 12.26.3 Until the facts are clear, answer the media queries by saying: "A statement will be issued by the company as soon as the facts have been determined; until then no information is available." When the facts become known, the senior ZARNAS COMPANIES employee will prepare a statement that will be released to the news media.

12.27 DRILLS

- 12.27.1 Live drills will represent what could happen in the event of an actual emergency as identified herein (ex. significant spill event, fire or other significant emergency event). The drill will be planned by the safety director with minimum inclusion of other personnel to ensure responses are realistic to such an event. If possible, the drill should include other emergency agencies or groups that would normally be involved in such an event.
- 12.27.2 Following the drill, the senior ZARNAS COMPANIES employee and safety director will meet with the major accident participants and critique the event. The critique will evaluate what went right and what went wrong as identified in the emergency action plan for such an event. Documentation of the critique will be provided to the safety director for review and feedback.
- 12.27.3 Live emergency drills will be conducted at least twice a year, during the first and third quarters of each year. Drills will involve discussion of a specific emergency event, what actions should take place, who would be involved and what role each would play. Drills are more conducive to involvement by other emergency response agencies since they do not involve a significant commitment of equipment and personal resources. The drill will be documented and submitted to the safety director.

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12.28 TRAINING

- 12.28.1 The emergency action plan is reviewed at the following times with each employee:
 - 12.28.1.1 Initially when the plan is developed
 - 12.28.1.2 Whenever a new employee is hired
 - 12.28.1.3 Whenever the employee is assigned initially to a job
 - 12.28.1.4 Whenever employee responsibilities or designated actions under the plan change
 - 12.28.1.5 Whenever new equipment, materials or processes are introduced into the worksite
 - 12.28.1.6 Whenever the layout or design of the facility changes
 - 12.28.1.7 Whenever the plan is changed
- 12.28.2 The contents of this plan are communicated through a briefing delivered by supervisors followed by a demonstration. It is communicated through a presentation followed by drills.
- 12.28.3 Each ZARNAS COMPANIES employee will be briefed and trained in regards to their individual roles and expectations of them during an emergency.
- 12.28.4 Emergency drills will be conducted twice a year to ensure awareness and effectiveness of emergency procedures, such as communication, chain of command, roles and responsibilities and evacuation procedures. Where identified, based on risk level and preparedness, more frequent drills or exercises may be implemented.
- 12.28.5 After a drill, the safety director judges the effectiveness of the plan and reviews any employee input concerning the drill. Employees performing the drill may identify something that did not follow procedure or was ineffective.
- 12.28.6 All workers, both onsite and offsite, will be given adequate instruction and training prior to work commencing. The criteria of the training may include but is not limited to the following:
 - 12.28.6.1 Procedures
 - 12.28.6.2 Roles and responsibilities
 - 12.28.6.3 Location of safe meeting areas
 - 12.28.6.4 Location of and operational procedures for emergency equipment
 - 12.28.6.5 Hazards
 - 12.28.6.6 Procedure for summoning emergency responders
 - 12.28.6.7 Regulatory requirements
 - 12.28.6.8 Lessons learned from previous response activities (real and simulated)

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- 12.28.7 Where workers are placed in operations with the potential for fire, appropriate and adequate training in prevention and firefighting must be provided to those workers. Where workers or members of the public are placed in positions of having to escape from a fire, prior orientation and evacuations procedures must be made known.
- 12.28.8 All records of training, meetings and exercises will be maintained for a period of three years and will be reported to the requesting regulatory agency if requested for assessment.
- 12.28.9 New hazards or personnel will be inducted into the action plan at the earliest opportunity and prior to conducting those duties.
- 12.28.10 All ZARNAS COMPANIES workers must be given adequate instruction in fire prevention and emergency evacuation procedures applicable to their worksite.



EMERGENCY TELEPHONE NUMBERS

Ambulance	9-1-1
	Other:
Doctor	9-1-1
	Other:
Hospital	9-1-1
	Other:
Police	9-1-1
	Other:
Fire	9-1-1
	Other:

Job Number: _____
 Coordinator: _____

Location: _____
 Back Up: _____

EVACUATION ALARMS

Type	For Area

All clear signal: _____

Tested on: _____ (day) at _____ (time)

ASSEMBLY POINTS

Location	For Area

EVACUATION ROUTE MAPS SHOULD BE AVAILABLE FOR VIEWING AT ALL WORK LOCATIONS.

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13.1 PURPOSE

13.1.1 The purpose of this policy is to ensure jobsites are free from uncontrolled fall hazards, employees are properly trained in fall prevention and protection and that fall prevention systems are inspected and monitored to ensure effectiveness. It is the policy of ZARNAS COMPANIES to take all practical measures possible to prevent employees from being injured by falls.

13.2 RESPONSIBILITIES

13.2.1 ZARNAS COMPANIES

- 13.2.1.1 Take necessary steps to eliminate, prevent and control fall hazards and fully comply with the OSHA fall protection standard. The first priority is given to the elimination of fall hazards. If a fall hazard cannot be eliminated, effective fall protection will be implemented and monitored to control the risks of injury due to falls.
- 13.2.1.2 Train employees exposed to potential falls from heights to minimize exposure.
- 13.2.1.3 Provide fall protection equipment and require its use by all employees. Foreman will be responsible for implementation of a fall protection plan for their jobsite.
- 13.2.1.4 Take all practical measures to prevent fall and control fall-related situations.

13.2.2 Engineering

- 13.2.2.1 Design or verify anchor points and lifeline system standards are adequate to handle all fall arrest loads imposed by the attachment of PFAS.
- 13.2.2.2 Design or verify guardrail or alternate fall protection systems.

13.2.3 Supervisors

- 13.2.3.1 Committed to the philosophy of continuous fall hazard control whenever the potential exists that an employee may fall from heights of six feet or more. Jobsites and activities will be assessed by onsite supervisors and all other employees in efforts to identify all above ground fall hazards. If a fall hazard cannot be eliminated by practical means, then other engineering controls will be considered (ex. personnel lifts).
- 13.2.3.2 Responsible for ensuring that this program is evaluated and revised annually or when there is a generally understood need for such review and/or revision.
- 13.2.3.3 Provide a training program for employees who work at heights or work in areas where potential for fall hazards exist.
- 13.2.3.4 Ensure employees required to work at heights have received suitable and sufficient information and training.
- 13.2.3.5 Provide resources which enable personnel to conduct tasks at height safely.

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13.2.4 Employees

13.2.4.1 Assess jobsite and activities to identify above ground fall hazards.

13.2.4.2 Be trained in the proper use of fall protection equipment and will adhere to the 100% tie-off philosophy when using fall protection.

13.3 HAZARD IDENTIFICATION

13.3.1 The foreman on each jobsite will be responsible for identifying fall hazards on their jobsite. The foreman will evaluate each situation or work procedure where employees may be exposed to a fall of six feet or more. The foreman will be responsible for developing a plan to eliminate the exposures, if possible or to select the appropriate fall protection systems and/or equipment.

13.3.2 The fall protection plan is prepared by a qualified person for the specified worksite.

13.3.3 Hazard control will be utilized through personal fall protection, positioning devices, employee training, program audits, inspections, appropriate supervision and signs.

13.4 FALL PROTECTION REQUIRED

13.4.1 Examples where fall protection is required include, but are not limited to the following:

13.4.1.1 Personnel baskets

13.4.1.2 Man lifts (JLG)

13.4.1.3 Ladders (when used as working platforms)

13.4.1.4 Incomplete structural steel/scaffolding

13.4.1.5 Working/walking in elevated pipe racks

13.4.1.6 Opened tower tray man ways (where more than 6 foot continuous drop)

13.4.1.7 Tank roof without OSHA guardrail system (regardless of work location)

13.4.1.8 Open access ways for hoist areas

13.4.1.9 Building roofs without a 42" continuous parapet wall

13.4.1.10 Removal of fans from cooling towers.

13.4.2 Fall protection equipment must meet ANSI and ASTM requirements.

13.4.3 Additional fall protection is not required when working in these situations:

13.4.3.1 OSHA approved scaffolds - maintain 100% tie off on scaffolds

13.4.3.2 Roofs with a 42" high, continuous parapet

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- 13.4.3.3 Stairways with standard railings
- 13.4.3.4 Caged ladders
- 13.4.3.5 Portable or scaffold ladders (only when used for access)
- 13.4.3.6 Elevated walkways protected by guardrail
- 13.4.3.7 Non-motorized portable work platforms equipped with guardrail

13.5 FALL PROTECTION TYPES

- 13.5.1 One of the following types of fall protection systems will be used when our employees are exposed to fall hazards in excess of six feet:
 - 13.5.1.1 Standard guardrails, cables or floor hole covers
 - 13.5.1.2 Personal fall arrest system
 - 13.5.1.3 Positioning devices
 - 13.5.1.4 Fall restraint systems

13.6 GUARDRAILS, SAFETY CABLES OR COVERS

- 13.6.1 Standard guardrails, safety cables and hole covers are ZARNAS COMPANIES preferred means of fall protection on jobsites.
- 13.6.2 Railings will be constructed of wood or in an equally substantial manner from other materials and will consist of a top rail not less than 42 inches or more than 45 inches in height measured from the upper surface of the top rail to the floor, platform, runway or ramp level and a midrail. The midrail will be halfway between the top rail and the floor, platform, runway or ramp.
- 13.6.3 Wooden posts will not be less than 2 in. by 4 in. in cross section, spaced at 8 ft. or closer intervals.
- 13.6.4 Wooden top railings will be smooth and of 2 inch by 4 inch or larger material. Double, 1 inch by 4 inch members may be used for this purpose, provided that one member is fastened in a flat position on top of the posts and the other fastened in an edge-up position to the inside of the posts and the side of the top member. Midrails will be of at least 1 inch by 6 inch material.
- 13.6.5 The rails will be placed on the side of the post that will afford the greatest support and protection.
- 13.6.6 All guardrails, including their connections and anchorage, will be capable of withstanding a load of 13 pounds per linear foot applied either horizontally or vertically downward at the top rail.
- 13.6.7 Railings receiving heavy stresses from employees trucking or handling materials will be provided additional strength by the use of heavier stock, closer spacing of posts, bracing or by other means.

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- 13.6.8 Top rails and midrails of guardrail systems must be at least ¼ inch nominal diameter or thickness to prevent cuts and lacerations.
- 13.6.9 If wire rope is used for top rails, it must be flagged at not more 4 feet intervals with high-visibility material.
- 13.6.10 Steel and plastic banding cannot be used as top rails or midrails.
- 13.6.11 Manila, plastic or synthetic rope used for top rails or midrails must be inspected as frequently as necessary to ensure strength and stability.
- 13.6.12 The top edge height of top rails or (equivalent) guardrails must be 42 inches (+ or - 3 inches) above the walking/working level.
- 13.6.13 When workers are using stilts, the top edge height of the top rail or equivalent member, must be increased an amount equal to the height of the stilts.
- 13.6.14 Screens, midrails, mesh, intermediate vertical members or equivalent intermediate structural members must be installed between the top edge of the guardrail system and the walking/working surface when there are no walls or parapet walls at least 21 inches high.
 - 13.6.14.1 When midrails are used, they must be installed to a height midway between the top edge of the guardrail system and the walking/working level.
 - 13.6.14.2 When screens and mesh are used, they must extend from top rail to the walking/working level and along entire opening between top rail supports. Intermediate members, such as balusters, when used between posts, will not be more than 19 inches apart.
 - 13.6.14.3 Other structural members - additional midrails and architectural panels - will be installed so that there are no openings in the guardrail system more than 19 inches.
 - 13.6.14.4 The guardrail system must be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top edge in any outward or downward direction. When the 200 pound test is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches above the walking/working level.
 - 13.6.14.5 Midrails, screens, mesh, intermediate vertical members, solid panels and equivalent structural members will be capable of withstanding a force of at least 150 pounds applied in any downward or outward direction at any point along the midrail or other member. Guardrail systems will be surfaced to protect workers from punctures or lacerations and to prevent clothing from snagging.
- 13.6.15 The ends of top rails and midrails must not overhang terminal posts, except where such overhang does not constitute a projection hazard.
- 13.6.16 When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section must be placed across the access opening between guardrail sections when hoisting operations are not taking place.

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- 13.6.17 At holes, guardrail systems must be set up on all unprotected sides or edges. When holes are used for the passage of materials, the hole will have not more than two sides with removable guardrail sections. When the hole is not in use, it must be covered or provided with guardrails along all unprotected sides or edges.
- 13.6.18 If guardrail systems are used around holes that are used as access points (such as ladder ways), gates must be used or the point of access must be offset to prevent accidental entrance.
- 13.6.19 If guardrails are used at unprotected sides or edges of ramps and runways, they must be erected on each unprotected side or edge.
- 13.6.20 Floor, roof and skylight openings will be guarded by a standard railing and toeboards or cover. Covering will be capable of safely supporting the greater of the weight of a 200-pound person or the weight of worker(s) and material(s) placed thereon.
- 13.6.21 Coverings will be secured in place to prevent accidental removal or displacement, and will bear a pressure sensitized, painted, or stenciled sign with legible letters not less than 1 inch high, stating: *OPENING – DO NOT REMOVE*. Markings of chalk or keel will not be used.
- 13.6.22 Ladder way openings or platforms will be guarded by standard railings with standard toeboards on all exposed sides, except at entrance opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.
- 13.6.23 Floor holes, into which persons can accidentally walk, will be guarded by either a standard railing with standard toeboards on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole will be protected by standard railings.
- 13.6.24 Wall openings, from which there is a drop of more than 4 feet, and the bottom of the opening is less than 3 feet above the working surface, will be guarded with either a standard rail or intermediate rail or both.
- 13.6.25 An extension platform outside a wall opening onto which materials can be hoisted for handling will have side rails or equivalent guards of standard specifications. One side of an extension platform may have removable railings in order to facilitate handling materials.
- 13.6.26 Wall opening protection barriers will be of such construction and mounting that, when in place at the opening, the barrier is capable of withstanding a load of at least 200 pounds applied in any direction (except upward).
- 13.6.27 All elevator shafts in which cages are not installed and which are not enclosed with solid partitions and doors will be guarded on all open sides by standard railings and toeboards.
- 13.6.28 A full body harness and lanyard are required when using boom lifts.

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13.7 PERSONAL FALL ARREST SYSTEM

- 13.7.1 These consist of an anchorage, connectors and a body harness and may include a deceleration device, lifeline or suitable combinations. If a personal fall arrest system is used for fall protection, it must do the following:
 - 13.7.1.1 Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness
 - 13.7.1.2 Be rigged so that an employee can neither free fall more than 6 feet nor contact any lower level
 - 13.7.1.3 Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet
 - 13.7.1.4 Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of six feet or the free fall distance permitted by the system, whichever is less.
- 13.7.2 The use of body belts for fall arrest is prohibited and a full body harness is required.
- 13.7.3 Personal fall arrest systems must be inspected prior to each use for wear damage and other deterioration. Defective components must be removed from service.
- 13.7.4 Personal fall arrest systems consist of a full body harness and a shock-absorbing lanyard attached to suitable anchorage. They are also an effective means of preventing fall accidents. The system does not actually stop you from falling, but catches you and safely stops you from hitting the level below. Fall arrest systems will be our preferred means of protection when standard guardrails, safety cables or covers are not practical.
- 13.7.5 Ropes and straps (webbing) used in lanyards, lifelines and strength components of body harnesses will be made from synthetic fibers except when they are used in conjunction with hot work where the lanyard may be exposed to damage from heat or flame.
- 13.7.6 Anchorages used for attachment of personal fall arrest equipment will be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached or will be designed, installed and used as part of a complete personal fall arrest system which maintains a safety factor of at least two; and under the supervision of a qualified person.
- 13.7.7 The attachment point of the body harness will be located in the center of the wearer's back near shoulder level or above the wearer's head.
- 13.7.8 Where practical, the anchor end of the lanyard will be secured at a level not lower than the employee's waist, limiting the fall distance to a maximum of six feet.
- 13.7.9 Harnesses, lanyards and other components will be used only for employee protection as part of a personal fall arrest system and not to hoist materials.

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- 13.7.10 Personal fall arrest systems and components subjected to impact loading will be immediately removed from service and will not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
- 13.7.11 ZARNAS COMPANIES will provide for prompt rescue of employees in the event of a fall or will assure that employees are able to rescue themselves.
- 13.7.12 Personal fall arrest systems will be inspected prior to each use for wear, damage and other deterioration and defective components will be removed from service.
- 13.7.13 Any lanyard, safety harness or drop line subjected to in-service loading, as distinguished from static load testing, will be immediately removed from service and will not be used again for employee safeguarding.
- 13.7.14 Personal fall arrest systems will not be attached to guardrails, unless the guardrail is capable of safely supporting the load.
- 13.7.15 Each personal fall arrest system will be inspected not less than twice annually by a competent person in accordance with the manufacturer's recommendations. The date of each inspection will be documented.

13.8 LIFELINES AND LANYARDS

- 13.8.1 Horizontal lifelines will be designed, installed and used under the supervision of a qualified person, as part of a complete personal fall arrest system, maintaining a safety factor of two.
- 13.8.2 On suspended scaffolds or similar work platforms with horizontal lifelines (which may become vertical lifelines) the devices used to connect to a horizontal lifeline will be capable of locking in both directions on the lifeline.
- 13.8.3 Lanyards and vertical lifelines will have a minimum breaking strength of 5,000 pounds. Except in hoist ways of elevator shafts during construction, when vertical lifelines are used, each employee will be attached to a separate lifeline. Lifelines will be protected against being cut or abraded.
- 13.8.4 Self-retracting lifelines and lanyards that automatically limit free fall distance to 2 feet or less will be capable of sustaining a minimum tensile load of 3,000 pounds.
- 13.8.5 Self-retracting lifelines and lanyards that do not limit free fall distance to 2 feet or less will be capable of sustaining a minimum tensile load of 5,000 pounds.

13.9 PERSONAL FALL RESTRAINT

- 13.9.1 Fall restraint systems are designed to prevent the wearer from reaching the edge or danger area and thus prevent them from falling.
- 13.9.2 Anchorage points used for fall restraint will be capable of supporting 4 times the intended load.
- 13.9.3 Restraint protection will be rigged to allow the movement of employees only as far as the sides of the working level or working area.

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13.10 LEADING EDGES

13.10.1 Each employee who is constructing a leading edge six feet or more above lower levels will be protected by guardrail systems, safety net systems or personal fall arrest systems.

13.11 FRAMEWORK AND REINFORCING STEEL

13.11.1 For employees, while moving vertically and/or horizontally on the vertical face of rebar assemblies built in place, fall protection is not required when employees are moving. OSHA considers the multiple hand holds and foot holds on rebar assemblies as providing similar protection as that provided by a fixed ladder. No fall protection is necessary while moving point to point for heights below 24 feet. An employee must be provided with fall protection when climbing or otherwise moving at a height more than 24 feet, the same as for fixed ladders.

13.12 HOIST AREAS

13.12.1 Each employee in a hoist area will be protected from falling six feet or more by guardrail systems or personal fall arrest systems. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, as during the landing of materials, and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that employee must be protected by a personal fall arrest system.

13.13 RAMPS, RUNWAYS AND OTHER WALKWAYS

13.13.1 Each employee using ramps, runways and other walkways will be protected from falling six feet or more by guardrail systems.

13.14 CONTROLLED ACCESS ZONES

13.14.1 A controlled access zone is a work area designated and clearly marked in which certain types of work may take place without the use of conventional fall protection systems, guardrail, personal arrest or safety net to protect the employees working in the zone.

13.14.2 Site specific plans are not warranted because controlled access zones are not utilized.

13.14.3 Controlled access zones are used to keep out workers other than those authorized to enter work areas from which guardrails have been removed.

13.14.4 Controlled access zones, when created to limit entrance to areas where leading edge work and other operations are taking place, must be defined by a control line or by any other means that restrict access.

13.14.5 Control lines will consist of ropes, wires, tapes or equivalent materials and supporting stanchions, and each must be:

13.14.5.1 Flagged or otherwise clearly marked at not more than 6 foot intervals with high-visibility material.

13.14.5.2 Rigged and supported in such a way that the lowest point is not less than 39 inches from the walking/working surface and the highest point is not more than 45 inches or

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more than 50 inches when overhand bricklaying operations are being performed from the walking/working surface.

13.14.5.3 Must be strong enough to sustain stress of not less than 200 pounds.

13.14.6 Control lines will extend along the entire length of the unprotected or leading edge and will be approximately parallel to the unprotected or leading edge.

13.14.7 Control lines also must be connected on each side to a guardrail system or wall.

13.14.8 When control lines are used, they will be erected not less than 6-feet nor more than 25 feet from the unprotected or leading edge, except when pre-cast concrete members are being erected. In the latter case, the control line is to be erected not less than 6 feet nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.

13.14.9 Controlled access zones when used to determine access to areas where overhand bricklaying and related work are taking place are to be defined by a control line erected not less than 10 feet or more than 15 feet from the working edge. Additional control lines must be erected at each end to enclose the controlled access zone. Only employees engaged in overhand bricklaying or related works are permitted in the controlled access zones.

13.14.10 On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones must be enlarged as necessary to enclose all points of access, material handling areas, and storage areas.

13.14.11 On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work will be removed.

13.15 SAFETY MONITORING SYSTEMS

13.15.1 When no other alternative fall protection has been implemented, ZARNAS COMPANIES will implement a safety monitoring system. ZARNAS COMPANIES will appoint a competent person and ensure that the safety monitor:

13.15.1.1 Is competent in the recognition of fall hazards

13.15.1.2 Capable of warning workers of fall hazards and in detecting unsafe work practices

13.15.1.3 Is operating on the same walking/working surfaces of the workers and can see them

13.15.1.4 Is close enough to work operations to communicate orally with workers and has no other duties to distract from the monitoring function

13.16 INCIDENT INVESTIGATION

13.16.1 Incidents and near misses will be reported to the safety director within 24 hours of the incident. Reports will remain open until the incident has been investigated and deemed closed. Incident investigation results will be implemented and changes applied to the plan as necessary.

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13.16.2 Incident investigations will be conducted to evaluate the fall protection plan for potential updates to practices, procedures or training in order to prevent reoccurrence.

13.17 RESCUE

13.17.1 If employee cannot rescue themselves, ZARNAS COMPANIES will provide immediate rescue for anyone involved in a fall incident. Therefore, prior to conducting work at height and donning a harness, a risk assessment must be performed which includes a rescue plan. This will also require that the equipment for rescue is approved, inspected and ready for use.

13.17.2 The onsite supervisor is responsible for coordinating prompt rescue of an employee who has been subject to a fall and for conducting investigations of equipment and circumstances.

13.17.3 Provisions to rescue such an employee will include, but not necessarily be limited to:

13.17.3.1 Availability of a ladder, lift or ropes and fall arrest equipment to assist with the retrieval of the employee.

13.17.3.2 Telephone number of the local fire department or onsite rescue team to alert in the event that retrieval cannot be executed by other individuals safely.

13.17.3.3 All employees who have been involved in a fall should be examined by a licensed medical professional without regard to the use of fall arresting device.

13.18 TRAINING

13.18.1 A training program will be provided for employees who might be exposed to fall hazards. Training will enable employees to recognize hazards of falling and train employees in procedures to follow to minimize these hazards.

13.18.2 All employees expected to perform work on and use portable ladders will receive appropriate training, as necessary. Training will be conducted by a qualified person and include proper inspection techniques, use and maintenance. All training will be documented.

13.18.3 ZARNAS COMPANIES will maintain written documentation records showing employee name, date of training, topics covered and instructor signature.

13.18.4 ZARNAS COMPANIES will provide retraining when there are deficiencies in work, changes at the jobsite or equipment changes that render previous training obsolete.

13.18.5 Subcontractors will be responsible for training employees in accordance with applicable OSHA regulations.

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FATIGUE MANAGEMENT

14.1 PURPOSE

14.1.1 The purpose of this policy is to assist in the assessment of the causes of fatigue and mitigate the related hazards for ZARNAS COMPANIES

14.2 RESPONSIBILITIES

14.2.1 ZARNAS COMPANIES

- 14.2.1.1 Ensure there is a minimum of 12 hours rest between consecutive shifts
- 14.2.1.2 Limit overtime so workers are not working longer than 12 hours for multiple shifts
- 14.2.1.3 Attend supervisor training

14.2.2 Supervisor

- 14.2.2.1 Ensure that persons under their control are aware of and comply with this procedure
- 14.2.2.2 Ensure that applicable work schedules comply with this procedure
- 14.2.2.3 Monitor personnel for the signs and symptoms of fatigue
- 14.2.2.4 Conduct a review of any fatigue related incidents and the effectiveness of existing control measures as required
- 14.2.2.5 Make safety critical decisions and take appropriate actions to prevent loss
- 14.2.2.6 Attend supervisor training

14.2.3 Employee

- 14.2.3.1 Comply with this fatigue management policy
- 14.2.3.2 Monitor for the signs and symptoms of fatigue in their coworkers and team members
- 14.2.3.3 Ensure they get enough sleep and come to work fresh and alert
- 14.2.3.4 Plan social activities to ensure sufficient sleep before starting work
- 14.2.3.5 Consult with their supervisor when a fatigue issue exists
- 14.2.3.6 Attend awareness level training

14.2.4 Safety director

- 14.2.4.1 Provide timely advice, support and assistance to supervisors in the implementation of this procedure

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- 14.2.4.2 Conduct a review of fatigue risk analysis and the effectiveness of existing control measures as required
- 14.2.4.3 Ensure that fatigue related incidents are reported and fatigue is considered during incident investigation
- 14.2.4.4 Attend supervisor training

14.3 GENERAL

- 14.3.1 Fatigue is caused by prolonged periods of physical and/or mental exertion without enough time to rest and recover. Causes of fatigue can result from features of the job and a worker's personal life.
- 14.3.2 Fatigue is a complex issue that not only arises from hours of work and activities at the workplace but it is also influenced by factors outside of work (ex. family responsibilities, stress, lifestyle, personal health, etc.). The management of fatigue is a shared responsibility between management and each individual.
- 14.3.3 Consequences of fatigue
 - 14.3.3.1 Decreased alertness
 - 14.3.3.2 Slowed reaction time
 - 14.3.3.3 Poor hand-eye coordination
 - 14.3.3.4 Poor communication
 - 14.3.3.5 Higher error rates
 - 14.3.3.6 Impaired performance
 - 14.3.3.7 Higher levels of sleepiness and fatigue
 - 14.3.3.8 Reduced alertness and vigilance
 - 14.3.3.9 Reduced decision making ability
 - 14.3.3.10 Poor judgment of performance, especially when assessing risks
 - 14.3.3.11 Being easily distracted during complex tasks
 - 14.3.3.12 Difficulty responding to emergencies
 - 14.3.3.13 Loss of awareness of critical situations
 - 14.3.3.14 Inability to remember the sequence of events
- 14.3.4 Workers who drive motor vehicles for extended hours must be aware of proper fatigue management. As the work type changes, shop workers, operations and support personnel must also be aware of the signs of fatigue and must act accordingly.

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- 14.3.5 Office work, business travel and commute time have associated fatigue risks that must be managed. Business travel to operational sites must be managed through local journey management plans. General business travel must be managed through fatigue risk assessments. Commute time and core business hours for office locations must also be assessed.
- 14.3.6 Workers should be cautious with OTC sleep aids and/or energy pills/drinks. They may appear useful in the short term but can actually be quite harmful to health in the long term.
- 14.3.7 Food or drink consumed before going to bed can affect sleep quality. The digestive system is controlled by circadian rhythms and digestion slows down at night irrespective of bodily activity. The timing of meals and quality of foods eaten can be difficult to digest, may lead to digestive complaints (heartburn, indigestion) and affect sleep. Eat light, healthy food that is easy to digest.
- 14.3.8 Avoid drinks which contain caffeine and alcoholic beverages in the last few hours prior to sleep.
- 14.3.9 Excessive hours spent travelling to and from work can extend the effective length of a shift, reduce time available for sleep and recovery between shifts and may have significant effects on fatigue levels. Precautions include avoid driving when tired, share the drive with other workers and try not to drive in the hours when you would normally be asleep (especially midnight to dawn).
- 14.3.10 The risk of fatigue can be significantly reduced by effective planning and resourcing of work shifts, work cycles and rotations. Each supervisor must ensure that schedules, work cycles or job roles are assessed for fatigue risks. The following items must be assessed at a minimum:
 - 14.3.10.1 Are safety critical task planned during *circadian low* hours, 2am - 6am and 2pm - 4pm?
 - 14.3.10.2 Are complex tasks planned on the first or final shift of a nightshift work cycle?
 - 14.3.10.3 Are standby and on-call duties limited where possible?
 - 14.3.10.4 Does day shift start before 6am?
 - 14.3.10.5 Is the maximum number of shifts in a work cycle in line with relevant industry practices and regulatory standards?
 - 14.3.10.6 Do extended shifts (> 12 hours) occur more than three times in a work cycle?
 - 14.3.10.7 Do shifts rotate backwards (day to night to afternoon)?
- 14.3.11 Signs and symptoms of fatigue include frequent and long eye blinks, blurred vision, difficulty keeping eyes open, head nodding, repeated yawning, drowsy relaxed feeling, irritability, not feeling refreshed after sleep (waking tired), falling asleep at work poor reaction time, slow speech, loss of energy and an inability to concentrate. Chronic fatigue can also lead to long term health issues.
- 14.3.12 Employees are required to report fatigue directly to their supervisor.

14.4 RISK FACTORS

- 14.4.1 Work schedules which limit the time workers can physically and mentally recover from work may cause fatigue (ex. early start times or late finishes, too short breaks between shifts).

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- 14.4.2 Working at night when the body is biologically programmed to sleep can interrupt the body's clock. The body clock is the body's natural rhythm repeated every 24 hours. It regulates functions including sleep patterns, body temperature, hormone levels and digestion.
- 14.4.3 When a person's body clock is out of step alertness decreases making them feel fatigued. This increases the risk of making errors and causing incidents and injuries, either in the workplace or outside of work, including on the way to and from work.
- 14.4.4 Some types of work (ex. concentrating for extended period, performing repetitious or monotonous work and performing work requiring continued physical effort) can increase the risk of fatigue.
- 14.4.5 Workers can be mentally and physically fatigued at the same time. Work which is reactive and performed under high pressure may also increase the risk of fatigue.
- 14.4.6 While tired muscles can recover with rest, the brain can only recover with sleep. The most beneficial sleep is deep undisturbed sleep taken in a single continuous period.
- 14.4.7 When individuals get less sleep than they need in a day, they build up a sleep debt which accumulates until they can get enough sleep to overcome the sleep debt. Each extra day without enough sleep increases the debt, and when it becomes large enough fatigue can occur. It may take several days before a person recovers from a sleep debt. Sleep debt is common with night shift workers as they often experience difficulty getting enough undisturbed sleep during the day.
- 14.4.8 Working in harsh and uncomfortable conditions can contribute to fatigue (ex. exposure to heat, cold, vibration or noisy workplaces) can make workers tire quicker and impair performance.
- 14.4.9 Factors occurring outside of work may also contribute to fatigue. A worker's lifestyle, family responsibilities, health (ex. insomnia, sleep apnea, medication), other work commitments and extended travel between work and home may all increase the risk of fatigue.

14.5 RISK MANAGEMENT

- 14.5.1 Managing fatigue requires the following measures to be undertaken:
 - 14.5.1.1 Complete a fatigue risk analysis
 - 14.5.1.2 Create a management plan to eliminate or mitigate identified risks
 - 14.5.1.3 Ensure personnel are educated and informed of fatigue risk
- 14.5.2 Consult with workers, including managers, supervisors and the safety director about the impact of workloads and work schedules, including work related travel and work outside of normal hours (for example work a person has taken home to complete).
- 14.5.3 Examine work practices and systems of work, the degree of choice and control workers have over work hours, the pace of work and rest breaks and the type of work culture.
- 14.5.4 When determining if the work schedule is contributing to a fatigue problem consider the following:
 - 14.5.4.1 Length of shifts worked

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- 14.5.4.2 Previous hours and days worked - the effects of fatigue are cumulative, workers may have sleep debt due to the length of previous shift
- 14.5.4.3 Type of work being performed - the level of physical and/or mental effort required
- 14.5.4.4 Time of day when work is being performed - disrupting the body's circadian rhythms can cause fatigue and affect performance
- 14.5.5 Ensure workers have sufficient time between shifts. Workers who consider their work schedule is contributing to a fatigue problem should consult with their supervisor. The possibility of job rotation may be considered where practicable.
- 14.5.6 Obtain advice and information on fatigue from relevant experts, research, guidance materials and data published by regulators, industry associations, unions or other sources.
- 14.5.7 Review workplace incident data, including incidents travelling to and from the workplace, and ask the following questions:
 - 14.5.7.1 What is the likelihood fatigue is contributing to the incidents?
 - 14.5.7.2 What time of day do incidents occur?
 - 14.5.7.3 When incidents have occurred, how long had the workers involved been working? For example time since start of shift, number of hours worked that week and in the preceding three months.
 - 14.5.7.4 Do the incidents often happen when a worker's body clock is slowing the body down and concentration is poor?
- 14.5.8 Review human resource data, (ex. rates of unplanned absenteeism, staff turnover and workers compensation claims). Those with an injury or illness may be at greater risk of becoming fatigued.

14.6 CONTROLS

- 14.6.1 The best way to control the health and safety risks arising from fatigue is to eliminate the factors causing fatigue at the source. If elimination is not reasonably practicable, the risks must be minimized. What is reasonably practicable to do to manage the risk of fatigue will vary depending on the type of industry, the structure of an organization as well as the person carrying out the work.
- 14.6.2 Time spent away from the work environment allows workers to recover from fatigue and improve performance, vigilance, safety and efficiency. Breaks should be taken during shifts and should not be traded for an early finish time.
- 14.6.3 Design working hours and rosters to allow for good sleep opportunity and enough recovery time between work days or shifts for travelling, eating, washing and sleeping.
- 14.6.4 Develop a working hours policy on daily work hours, maximum average weekly hours, total hours over a three month period, on-call work and work-related travel.

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- 14.6.5 Develop procedures to manage and limit excessive working hours (ex. requiring minimum breaks on a regular basis) especially during longer shifts.
- 14.6.6 Ensure workers have and take adequate and regular breaks to rest, eat and rehydrate.
- 14.6.7 Schedule safety critical work outside the low body clock periods between 2am and 6am and between 2pm and 4pm.
- 14.6.8 Manage workload and work pace change caused by machinery breakdowns or planned and unplanned absences.
- 14.6.9 Avoid work arrangements which provide incentives to work excessive hours.
- 14.6.10 Fill vacant positions as soon as reasonably practicable and maintaining a relief pool of staff in high demand areas where fatigue is a risk.
- 14.6.11 Substance abuse screening for all full time and new hire employees will undergo drug and alcohol testing before entering the project site.
- 14.6.12 Set schedules ahead of time and avoid last-minute changes, to allow workers to plan leisure time.
- 14.6.13 Allocate shift and night workers consecutive days off to allow for at least two full nights' sleep including some weekends.
- 14.6.14 Overlap consecutive shifts to allow enough time for communication at shift handovers.
- 14.6.15 Avoid overtime allocation after afternoon or night shifts.
- 14.6.16 Consider if night work is necessary and rearrange schedules so non-essential work is not carried out at night.
- 14.6.17 Keep sequential night shifts to a minimum.
- 14.6.18 Ensure fit-for-purpose plant, machinery and equipment is used at the workplace. Ergonomic equipment is used to improve conditions such as lift assist devices for repetitive lifting, proper lighting and control of temperature and other ergonomic devices as deemed appropriate.
- 14.6.19 Encourage workers to report concerns they may have about work-related fatigue.
- 14.6.20 Redesign the job to limit periods of excessive mental or physical demands.
- 14.6.21 Develop contingency plans for potential situations where workers may have to unexpectedly work longer hours, more shifts or a long sequence of shifts.
- 14.6.22 Plan for expected changes in work flow including anticipated peaks and troughs during the year.
- 14.6.23 Provide a cool area where workers can take a rest break and rehydrate in hot work environments.
- 14.6.24 Rest is the most important control measure for managing fatigue.

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14.6.25 A person conducting a business or undertaking cannot control what a worker does outside of work. Workers have a duty to take reasonable care for their health and safety and this includes enough sleep so they can arrive at work ready for duty. However controls can be implemented to avoid potential conflicts between personal and work demands.

14.6.25.1 Develop a fatigue policy for all workers including managers and supervisors.

14.6.25.2 Consult workers about managing fatigue not just when at work, the risks associated with fatigue and how it relates to their health and safety duties.

14.7 TRAINING

14.7.1 Initial awareness level training and annual training must be provided to all new ZARNAS COMPANIES employees on how to recognize fatigue, how to control fatigue through appropriate work and personal habits and reporting of fatigue to supervision.

14.7.2 Training will assist all personnel to recognize the symptoms of fatigue and manage fatigue risks in a safe manner. As a minimum, the training topics must enable the individual to:

14.7.2.1 Understand responsibilities and know how to recognize the effects of fatigue in themselves and others.

14.7.2.2 Understand the influences of a healthy lifestyle and non-work activities on fatigue.

14.7.2.3 Understand the effects of medical conditions, sleep disorders and drugs and alcohol.

14.7.2.4 Understand how to apply personal countermeasures to managing fatigue.

14.7.2.5 Understand and accept their responsibility to use their recovery time effectively and present rested and fit for work when their work shift begins.

14.7.3 Initial and periodic supervisory level training must be provided for personnel with a supervisory role. The purpose of the training is to provide the skills and information to implement fatigue management principles in the daily operation of their assigned duties. This training will also assist supervisors to recognize and manage fatigue risks with their direct reports. Training topics must include those contained in the awareness level training and the following:

14.7.3.1 Understand responsibilities and when to initiate fatigue controls.

14.7.3.2 How to manage employees who present signs of fatigue.

**FATIGUE CHECKLIST**

The checklist provides assistance in identifying risks of fatigue but is not an exhaustive list of risk factors. If answer is yes to any of the questions, fatigue risks may need to be further assessed and control measures implemented.

Mental and physical work demands	
Does anyone carry out work for long periods which is physically demanding? (for example, tasks which are especially tiring and repetitive such as bricklaying, process work, moving bags of cement, felling trees)	Yes/No
Does anyone carry out work for long periods which is mentally demanding? (for example, work requiring vigilance, work requiring continuous concentration and minimal stimulation, work performed under pressure, work to tight deadlines, emergency call outs, interacting/dealing with the public)	Yes/No
Work scheduling and planning	
Does anyone consistently work or travel between midnight and 6am?	Yes/No
Does the work schedule prevent workers having at least one full day off per week?	Yes/No
Does the roster make it difficult for workers to consistently have at least two consecutive nights sleep per week?	Yes/No
Do work practices include on-call work, call-backs or sleepovers?	Yes/No
Does the roster differ from the hours actually worked?	Yes/No
Does the work roster include rotating shifts?	Yes/No
Does anyone have to travel more than one hour to get to their job?	Yes/No
Work Time	
Does anyone work in excess of 12 hours regularly (including overtime)?	Yes/No
Does anyone have less than 10 hours break between each shift? (for example, split shifts, quick shift changeovers)	Yes/No
Is work performed at low body clock times (between 2am and 6am)?	Yes/No
Environmental conditions	
Is work done in harsh or uncomfortable conditions? (ex. hot, humid or cold temperatures)	Yes/No
Does anyone work with plant or machinery that vibrates?	Yes/No
Is anyone working with hazardous chemicals?	Yes/No
Is anyone consistently exposed to loud noise?	Yes/No
Non-work factors	
Are workers arriving at work fatigued?	Yes/No

FATIGUE MANAGEMENT RISK MANAGEMENT CHART

This chart can be used to consider potential factors that contribute to the risk of fatigue. It outlines some control measures which can be implemented to manage the risk of fatigue in the workplace.

Step 1: Hazard identification

Identify potential hazards and risks at the workplace. Examples of some factors that contribute to fatigue are listed below. Consider these factors in the context of your specific workplace or industry.

Step 2: Risk Assessment

To assist risk assessment, a general level of risk for each hazard is indicated along arrow guides. In assessing risk consider interaction between hazard factors that could influence the level of risk. Also take into account specific workplace/ industry circumstances that may influence it.

Step 3 Risk Control

Where a hazard factor is assessed as medium/ higher risk, consider implementing control measures, such as those outlined in section 2 of this code.

Factors that contribute to Fatigue	General risk indicator for factors that contribute to fatigue			Control measures
<p>Work Scheduling and Planning Hours</p> <ul style="list-style-type: none"> ■ Average weekly hours (other than FIFO) ■ Total hours over a three month period (other than FIFO) ■ Daily work hours ■ Daily work hours and work-related travel, including commute ■ Scheduling of work 	<p>Lower risk Higher risk</p>			<p>The most appropriate control measures should be implemented for the identified risk factor. Control measures may include:</p> <ul style="list-style-type: none"> ■ Scheduling safety critical work outside low body clock periods (i.e. between 2am and 6am) ■ Structure shifts and work plans so that demands are highest towards the middle of the shift and decrease towards the end ■ Use forward rotation roster systems (day-evening-night) ■ Designing working hours and rosters to provide for adequate sleep opportunity (considering time for eating, washing, personal commitments etc) ■ Monitor actual time worked against the allocated roster and identify if excessive hours are being worked
	<p>35-40 hours (working week)</p>	<p>48 hours (working week)</p> <p>624 working hours</p> <p>9 working hours</p> <p>12 working hours</p> <p>10 working hours</p>	<p>56 hours (working week)</p> <p>13 working hours</p> <p>Irregular and unpredictable hours, short notice of schedule, extended overtime, on call across shift cycle</p>	
<p>Shiftwork</p> <ul style="list-style-type: none"> ■ Length of shift (other than FIFO) ■ Time of shift ■ Speed and direction of shift ■ Split shifts and variable shifts 	<p>Lower risk Higher risk</p>			<p>Additional control measures should be implemented for special work arrangements and can include:</p> <ul style="list-style-type: none"> ■ Considering sleep opportunity and recovery in instances where workers are required to work on call after a normal shift or on days off ■ Avoiding quick shift changeovers, such as finishing at 11pm and starting again at 7am ■ Use forward rotation roster systems (day-evening-night) ■ Allocate shift and night workers consecutive days off to allow for at least two full nights rest including some weekends
		<p>10 hours</p> <p>Afternoon shift</p> <p>Backward rotation (night/evening/morning)</p>	<p>13 hours</p> <p>Night shift</p> <p>slower rotation (i.e. weekly / 3-4 weekly rotation)</p>	
	<p>Day shift</p> <p>Forward rotation (morning/afternoon/night)</p>			
			<p>13 hour period</p>	

RISK MANAGEMENT CHART

Step 1: Hazard identification	Step 2: Risk Assessment		Step 3: Risk Control						
<p>Hazards that contribute to fatigue</p> <p style="text-align: center;">Night Work</p> <ul style="list-style-type: none"> ■ Shift end (for those working 8 hrs or more between 10pm and 6am) ■ Sequential night shifts 	<p>General risk indicator for hazards that contribute to fatigue</p> <p style="text-align: center;">Lower risk Higher risk</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">8 hours</td> <td style="width: 33%; text-align: center;">10 hours 6 or more 8 hour shifts 5 or more 10 hour shifts 4 or more 12 hour shifts</td> <td style="width: 33%; text-align: center;">12 hours After 10pm and before 6am</td> </tr> </table>		8 hours	10 hours 6 or more 8 hour shifts 5 or more 10 hour shifts 4 or more 12 hour shifts	12 hours After 10pm and before 6am	<p>Control measures</p> <p>The most appropriate control measures should be implemented for the identified risk factor. Control measures may include:</p> <ul style="list-style-type: none"> ■ Planning into work schedules enough workers and other resources to do the job without placing excessive demands on workers. ■ Keeping sequential night shifts to a minimum ■ Avoiding overtime allocation after afternoon or night shifts 			
8 hours	10 hours 6 or more 8 hour shifts 5 or more 10 hour shifts 4 or more 12 hour shifts	12 hours After 10pm and before 6am							
<p style="text-align: center;">Breaks</p> <ul style="list-style-type: none"> ■ Period of non-working following a sequence of night shifts ■ Frequency of breaks during work ■ Recovery time / sleep opportunity between work periods 	<p style="text-align: center;">Lower risk Higher risk</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">48 hours</td> <td style="width: 50%; text-align: center;">Less than 48 hours</td> </tr> <tr> <td style="text-align: center;">Adequate and regular breaks</td> <td style="text-align: center;">Infrequent or no breaks</td> </tr> <tr> <td style="text-align: center;">Adequate time for sleep, travel, meals, etc</td> <td style="text-align: center;">Inadequate time for sleep, travel, meals etc</td> </tr> </table>		48 hours	Less than 48 hours	Adequate and regular breaks	Infrequent or no breaks	Adequate time for sleep, travel, meals, etc	Inadequate time for sleep, travel, meals etc	<p>The most appropriate control measures should be implemented for the identified risk factor. Control measures may include:</p> <ul style="list-style-type: none"> ■ Ensuring that workers have and take adequate and regular breaks so that they can rest, eat and rehydrate ■ Including rest periods in the work schedule and allow time for controlled sleeping and napping if necessary ■ Designing working hours and rosters to allow for good quality sleep and enough recovery time between work days or shifts for travelling, eating, washing and sleeping
48 hours	Less than 48 hours								
Adequate and regular breaks	Infrequent or no breaks								
Adequate time for sleep, travel, meals, etc	Inadequate time for sleep, travel, meals etc								
<p>Job demands</p> <ul style="list-style-type: none"> ■ Repetition (physical and/or mental) ■ Physical ■ Mental 	<p style="text-align: center;">Lower risk Higher risk</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Varying task demands</td> <td style="width: 50%; text-align: center;">Highly repetitive work and or high concentration work, with high demands over an extended period of time</td> </tr> <tr> <td style="text-align: center;">Minimal physically demanding work</td> <td style="text-align: center;">Highly physically demanding work that results in muscle fatigue</td> </tr> </table>		Varying task demands	Highly repetitive work and or high concentration work, with high demands over an extended period of time	Minimal physically demanding work	Highly physically demanding work that results in muscle fatigue	<p>The most appropriate control measures should be implemented for the identified risk factor. Control measures may include:</p> <ul style="list-style-type: none"> ■ Install fit for purpose plant machinery and equipment for use at the workplace ■ Redesign jobs to limit periods of excessive mental or physical demands ■ Introduce job rotation to limit build up of mental and physical fatigue 		
Varying task demands	Highly repetitive work and or high concentration work, with high demands over an extended period of time								
Minimal physically demanding work	Highly physically demanding work that results in muscle fatigue								

RISK MANAGEMENT CHART

Step 1: Hazard identification

- Hazards that contribute to fatigue**
- Environmental Conditions**
- Exposure to hazardous substances and atmospheric contaminants
 - Exposure to noise
 - Exposure to extreme temperatures
 - Exposure to vibration

Step 2: Risk Assessment

General risk indicator for hazard factors

Lower risk

Higher risk

hazardous substances, low risk calculated using relevant exposure standard - exposure for short duration - low noise levels Short period of exposure Short period of exposure	For hazardous substances, high risk calculated using relevant exposure standard - exposure for long duration - high noise levels Long period of exposure Long period of exposure
---	--

Step 3: Risk Control

- Control measures**
- The most appropriate control measures should be implemented for the identified risk factor. Control measures may include:**
- Avoid working during periods of extreme temperature
 - Install heating devices in cold work environments or provide access to cooled areas
 - Install fit for purpose machinery (low noise)
 - Install cooling devices in hot work environments like truck cabins and ensure shelters for shade are available in hot work environments
 - Installation of adjustable, low vibration seats in appropriate machinery and vehicles and provide low vibration hand held equipment
 - Taking reasonable steps to ensure the workplace and surroundings are well lit, safe and secure

RISK MANAGEMENT CHART

Step 1: Hazard identification

Factors that contribute to fatigue

Individual and lifestyle

- Sleep (amount and quality)
- Health and wellbeing
- Social life
- Family responsibilities
- Other work commitments (for example having a second job)

Step 2: Risk Assessment

General risk indicator for factors that contribute to fatigue



<p>Night sleep 8 hours sleep in 24 hours</p>	<p>Day sleep 6 hours sleep in 24 hours</p> <p>Poor diet Recent illness/injury Sleep disorders</p> <p>Influence of alcohol drugs or amount of sleep</p>
<p>Adequate time to fulfil family responsibilities</p> <p>No other work commitments</p>	<p>Inadequate time to fulfil family responsibilities</p> <p>Additional work commitments (second job)</p>

Step 3: Risk Control

Control measures

The most appropriate control measures should be implemented for the identified risk factor. Control measures may include:

- Consulting with workers and designing shift rosters that enable workers to meet work and personal commitments
- Develop a fitness for work policy and consider implementing health and fitness programs

FIRE PREVENTION

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FIRE PREVENTION

15.1 PURPOSE

15.1.1 The purpose of this policy is to protect ZARNAS COMPANIES employees and facilities from the dangers of fire and reduce the risk of potential injuries, death and property damage by identifying and controlling fire hazards.

15.2 RESPONSIBILITIES

15.2.1 Supervisor

15.2.1.1 Provide and maintain portable fire extinguishers at the facility

15.2.1.2 Ensure that designated employees are trained extinguisher use

15.2.1.3 Schedule fire drills to provide opportunity for employees to practice orderly evacuation

15.2.1.4 Monitor the effectiveness of the program frequently and make suggestions as needed to improve the overall effectiveness of the program

15.2.2 Safety director

15.2.2.1 Develop a written program for the safety of employees and general public

15.2.2.2 Change, revise or update program as needed

15.2.2.3 Ensure all operations are in compliance with relevant rules and regulations

15.2.2.4 Ensure personnel are properly trained for their position and responsibilities

15.2.2.5 Ensure appropriate emergency equipment is available

15.2.2.6 Ensure annual extinguisher maintenance is conducted according to schedule

15.2.2.7 Monitor employee compliance to the provisions of the policy

15.2.2.8 Ensure that proper housekeeping is maintained at all times

15.2.2.9 Initiate orderly evacuation from the facility in the event of a fire or emergency

15.2.2.10 Account for employees in the designated staging/assembly area(s)

15.2.2.11 Coordinate employee accountability with management or customer safety representatives at the assembly area

15.2.3 Employee

15.2.3.1 Maintain proper housekeeping at the worksite

15.2.3.2 Participate in drills and other training exercises conducted by the company or client

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- 15.2.3.3 Report existing or potential fire hazard condition to the safety director immediately
- 15.2.3.4 Adhere to the requirements of the written program
- 15.2.3.5 Assemble in designated staging/assembly areas as instructed
- 15.2.3.6 Keep routes of egress unobstructed and easily accessible to emergency evacuation
- 15.2.3.7 Keep fire extinguishers unobstructed and properly mounted
- 15.2.3.8 Clean up spills promptly and control other sources of ignition in the work place
- 15.2.3.9 Properly dispose of trash and other refuse and ordinary combustibles
- 15.2.3.10 Periodically observe fire extinguishers to determine if recharging is necessary
- 15.2.3.11 Smoke only in those areas designated for smoking
- 15.2.3.12 Understand and comply with applicable procedures including, but not limited to incipient firefighting, emergency action plans, risk assessment and stop work authority

15.3 CLASSIFICATION OF FIRES AND METHODS OF EXTINGUISHMENT

15.3.1 *Class A fires*

- 15.3.1.1 Involves ordinary combustibles such as wood, cloth, paper, rubber and some plastics. Water is the preferred extinguishing method because it is a cooling, soaking and penetrating agent. Any extinguisher can be used with a reasonable degree of success.

15.3.2 *Class B fires*

- 15.3.2.1 Involves flammable or combustible liquids, gases, greases, and similar materials. Fires of this nature must be blanketed or smothered by an agent such as foam, carbon dioxide, dry chemical, water fog or sand.

15.3.3 *Class C fires*

- 15.3.3.1 Involves energized electrical equipment. If possible, de-energize or cut power to the energy source. Use a non-conductive extinguisher, such as a dry chemical or carbon dioxide (CO₂) is preferred because it leaves no residue.

15.3.4 *Class D fires*

- 15.3.4.1 Involves certain combustible metals such as magnesium, sodium, potassium, etc. Use dry chemical because it is a smothering and coating agent.

15.4 FIRE PREVENTION

- 15.4.1 All personnel will be familiar with the nearest fire exit or escape route.

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- 15.4.2 Good housekeeping will be maintained at all times to reduce the threat of fire and ensure clear access for emergency response.
- 15.4.3 Fire watches will be provided and trained in accordance with local requirements.
- 15.4.4 Smoking will be prohibited in areas with *No Smoking* signs posted.
- 15.4.5 Smoking approved areas will be provided with proper ashtrays; waste bins are not to be used.
- 15.4.6 No hot work (ex. grinding, welding, oxy-cutting, open flame activity) will be performed without first checking the immediate area, areas below and direction of wind for potential flammable material and clearance of personnel.
- 15.4.7 Hot work permits are required in accordance with the permit to work scope.
- 15.4.8 Hot work and paint products will be separated by 35 feet. Where this is not practicable, the activity will be supported by a task risk assessment.
- 15.4.9 All flammable products will be stored in approved containers, *No Hot Work* warning signs posted, and fire extinguishers will be provided nearby.
- 15.4.10 Report gas leaks immediately to supervision and the safety director for evaluation and action.
- 15.4.11 Waste bins will be located at a safe distance from hot work activities.
- 15.4.12 Where service manifolds are positioned in areas where hot work is being performed, overhead work will be covered with suitable material for protection of lower areas.
- 15.4.13 Mobile cranes and forklifts will be provided with fire extinguishers.
- 15.4.14 All fuel and oxygen gas hoses will be checked for leaks. Use only approved hose connections.
- 15.4.15 All fire alarms will be reported in accordance with the local emergency response procedures.
- 15.4.16 All personnel will be familiar with the procedure for initiating an alarm.

15.5 CONTROL OF FIRE RELATED HAZARDS

- 15.5.1 Employees are restricted to smoking only in designated smoking areas. Observe and obey posted *No Smoking* signs.
- 15.5.2 Only approved matches or lighters will be used to ignite tobacco products.
- 15.5.3 Designated smoking areas will remain clean and orderly at all times. Butts will be extinguished (not left to burn out) in the proper receptacle. Ordinary combustibles will not be allowed to accumulate.
- 15.5.4 Ensure that atmospheric conditions are safe prior to initiating sources of ignition even in designated smoking areas, especially on temporary jobsites.
- 15.5.5 All flammables in containers for immediate use should not be left open and unattended and should be returned to their original container or in proper storage after use.

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- 15.5.6 All spills of flammable substances at the jobsite should be neutralized (in accordance with label and SDS guidelines) with an inert absorbent material. Consult supervisor for disposal procedures.
- 15.5.7 Boxes, packaging material and other paper products should be properly disposed of whenever the item it contained has been removed for use (unless the container is designed for reuse).
- 15.5.8 Avoid the accumulation of candy wrappers, newspapers, magazines, food wrapping and other combustible materials in the work area.
- 15.5.9 Flashback arrestors will be provided and maintained through the main fuel gas distribution lines.

15.6 EXITS AND ROUTES OF EGRESS

- 15.6.1 Employees are to remain aware of the location of exits and routes of escape in case of fire or other emergency, whether on company property or on a temporary jobsite location.
- 15.6.2 Designated discharge exits are marked with visible self-illuminating exit signs. Avoid going into alleys, dead end streets or other areas as to not get trapped. Escape paths must remain unobstructed at all times, whether at the company or on client property.

15.7 USE OF FIRE EXTINGUISHERS

- 15.7.1 Where ZARNAS COMPANIES provides portable fire extinguishers for employee use at the worksite, they will also provide training of general principles for fire extinguisher use and the hazards involved in incipient stage firefighting.
- 15.7.2 Fire extinguisher locations will be clearly marked. Fire extinguishers will be maintained in the correct locations and will be kept clear for access.
- 15.7.3 Fire extinguishers will be used only for their designed purpose.
- 15.7.4 Any person tampering with fire extinguishers will be subjected to disciplinary action.
- 15.7.5 Work trucks and mobile heavy equipment are equipped with ABC rated fire extinguishers.
- 15.7.6 Fire extinguishers found to be unfit for service will be removed from service and immediately replaced with an extinguisher in suitable working order.
- 15.7.7 Fire extinguisher use should be restricted to fighting fires in the incipient stage. Even trained employees should never attempt to fight a fire in an area where explosives or flammables are used or stored. The first observing employee should sound a general alarm to evacuate the area.
- 15.7.8 A discharged fire extinguisher must be turned in to the safety director. A replacement will be provided as soon as practical after the removal of a discharged extinguisher.

15.8 FIRE EXTINGUISHER INSPECTION AND MAINTENANCE

- 15.8.1 Extinguishers will be inspected and tested in accordance with manufacturer's recommendations and local regulatory requirements.

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- 15.8.2 Discharged or empty fire extinguishers will be removed from mount and replaced with a charged one. Fire extinguishers removed for recharge or repair are to be turned in to the safety director.
- 15.8.3 Fire extinguishers will be visually inspected at least once per month to ensure that they are properly charged, located and accessible. It will be the responsibility of the onsite safety director to ensure that this inspection is performed.
- 15.8.4 At a minimum, the following should be noted during the inspection:
 - 15.8.4.1 Presence of tag applied by the vendor who serviced and/or sold the fire extinguisher
 - 15.8.4.2 Presence of the plastic retainer ring and pin through the handle
 - 15.8.4.3 Presence of the gauge which measures chemical level
 - 15.8.4.4 No visible damage to the nozzle, regulator or connections
 - 15.8.4.5 The fire extinguisher must remain visible and easily accessible
- 15.8.5 ZARNAS COMPANIES will ensure that portable fire extinguishers are subjected to an annual maintenance check, record the annual maintenance date and retain this record for one year after the last entry or the life of the shell, whichever is less.
- 15.8.6 Inspections and maintenance must be documented and available upon request.

15.9 TRAINING

- 15.9.1 Employees selected to handle fire extinguishers and assist with incipient firefighting will be trained in associated hazards, general fire principles and general use of equipment. Only employees who have been trained will be allowed to operate fire extinguishers.
- 15.9.2 Training will be conducted prior to initial assignment and at least annually thereafter.
- 15.9.3 Personnel designated as the emergency fire team will receive extensive initial and ongoing training to meet all standards and regulations.

FIRST AID/RETURN TO WORK

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FIRST AID/RETURN TO WORK

16.1 PURPOSE

16.1.1 The purpose of this policy is to ensure that ZARNAS COMPANIES worksites are supplied with the resources and training necessary to provide effective initial treatment in the event of minor illness or injury to employees and/or staff.

16.2 RESPONSIBILITIES

16.2.1 Supervisors

16.2.1.1 Notify the safety director if need for restocking of first aid kits is observed.

16.2.1.2 Ensure that employees with serious injuries or illness are transported to emergency medical facilities when necessary.

16.2.2 Safety director

16.2.2.1 Provide first aid safety training as required.

16.2.2.2 Provide guidance to employees to prepare them to respond to questions and encourage compliance with this policy at their worksites.

16.2.2.3 Coordinate inspection and restocking all first aid kits in ZARNAS COMPANIES on a monthly basis.

16.2.3 Employee

16.2.3.1 Record use and purpose of items used from first aid kits.

16.2.3.2 Notify supervisor immediately upon being injured.

16.2.3.3 Notify supervisor of injury or illness of co-workers who may be incapacitated.

16.2.3.4 Avoid contact with blood or other pathogen carrying fluids of injured workers.

16.2.3.5 Employees are not designated first respondents and are in no way required to give direct first aid or onsite medical treatment.

16.2.4 ZARNAS COMPANIES employees with the responsibility of being a first responder will ensure aid is rendered in a responsible manner as to not place themselves or other workers at risk. Ensure that aid is not rendered beyond their level.

16.3 PROCEDURE

16.3.1 In the absence of medical services onsite, ZARNAS COMPANIES will provide:

16.3.1.1 Personnel trained in first aid and CPR.

16.3.1.2 A first aid kit located in a common area.

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- 16.3.1.3 Any incidents or injuries will be reported to the safety director per company reporting procedure. For serious injuries/illness 9-1-1 will be called to assist.
- 16.3.1.4 Regular inspections of the medical kit to ensure supply levels.
- 16.3.1.5 Regular verification of personnel with first aid and CPR certificates.
- 16.3.2 For jobsites that do not have an onsite infirmary, infirmary, clinic, hospital or physician, that is reasonably accessible in terms of time and distance to the jobsite, a first aid responder will be provided with sufficient medical supplies and equipment to render first aid.
- 16.3.3 Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service will be provided.
- 16.3.4 The first aid and CPR certification must be obtained from the US Bureau of Mines, the American Red Cross or equivalent training that can be verified by documentary evidence.
- 16.3.5 In the event an employee, contractor, visitor, etc. is injured or suddenly becomes ill, the following sequence of steps will be followed:
 - 16.3.5.1 Notify onsite medic/first responder and the supervisor immediately.
 - 16.3.5.2 Onsite medic/first responder determines if immediate medical attention is required.
 - 16.3.5.3 If injured person requires immediate medical attention, transport to hospital and implement the emergency response. Contact information for health care providers, hospitals and ambulance services will be listed on the emergency response flowchart. First responders will call 9-1-1 for additional immediate assistance.
 - 16.3.5.4 For minor injuries, first responder will administer first aid to the extent of training.
 - 16.3.5.5 First aid supplies and eye wash stations can be accessed at first aid stations.
 - 16.3.5.6 Trained personnel will clean potentially bloodborne pathogen contaminated materials as per the ZARNAS COMPANIES exposure control program.

16.4 CLASSIFICATION OF INJURIES

- 16.4.1 Injuries are classified according to the Worker's Compensation injury classification guidelines:
 - 16.4.1.1 Lost workday case (LWC): Any work related injury or illness which prevents the employee from reporting to work on any subsequent scheduled work day.
 - 16.4.1.2 Restricted workday case (RWC): Any work related injury or illness which prohibits the employee from performing one or more parts of those functions essential to his/her position, for any subsequent shift.
 - 16.4.1.3 Medical treatment case (MTC): Work related injury or illness that requires treatment by a physician or by a registered professional under the orders of a physician.

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- 16.4.2 ZARNAS COMPANIES reserves the right to withhold immediate classification of reported injuries where investigative information supplemented by the physician's medical opinions raise question to the validity of an injury claim by an employee, until all facts have been obtained.
- 16.4.3 ZARNAS COMPANIES will calculate its' recordable, incident, restricted duty and lost work day rates, by using the Worker's Compensation formula:

$$\frac{\text{Number of Recordable Cases X 200,000}}{\text{Total Employee Man hours}}$$

16.5 FIRST AID

- 16.5.1 The designated first aid person on each site will be available at all times to render appropriate first aid for injuries and illnesses.
- 16.5.2 The telephone numbers of the following emergency services in the area will be posted near the job telephone or otherwise made available to the employees where no jobsite telephone exists: a company authorized physician or medical clinic and one alternate if available, hospitals, ambulance services and/or fire protection services.
- 16.5.3 Prior to the commencement of work at any site, the supervisor or manager will locate the nearest preferred medical facility and establish that transportation or communication methods are available in the event of an employee injury.
- 16.5.4 Each employee will be informed of the procedures to follow in case of injury or illness through our new employee orientation program and safety meetings.
- 16.5.5 Where the eyes or body of any person may be exposed to injurious or corrosive materials, suitable facilities for drenching the body or flushing the eyes with clean water will be conspicuously and readily accessible.
- 16.5.6 First aid treatment of on the job injuries will be handled on the jobsite by a qualified and designated employee, who has had training in standard first aid and cardiopulmonary resuscitation (CPR) with a valid certificate in first aid training, the American Red Cross or equivalent. Administering of care at the immediate work area should be limited to the treatment of *first aid cases* (injuries/ illnesses not requiring immediate attention, ex. dizziness, nausea, minor cuts, minor burns, scrapes, trash in the eye, etc.), as a means of providing *immediate care* until trained help arrives.
- 16.5.7 ZARNAS COMPANIES will provide at least one first aid trained employee to each temporary jobsite. This employee will be required to provide assistance only within the limits of their instruction and knowledge. Provisions will be made prior to the commencement of a project for prompt medical attention in case of serious injury.

16.6 FIRST AID KITS

- 16.6.1 First aid supplies will be readily available and periodically reassessed and adjusted.

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- 16.6.2 ZARNAS COMPANIES will provide at least one industrial size first aid kit on company premises, with one appropriately stocked kit for use on all temporary jobsite locations and be easily accessible when required.
- 16.6.3 Every jobsite will have access to at least one first aid kit in a weatherproof container. The first aid kit will be inspected regularly to ensure that it is well stocked, in sanitary condition and any used items are promptly replaced. The contents of the first aid kit will be arranged to be quickly found and remain sanitary. First aid dressings will be sterile and in individually sealed packages.
- 16.6.4 For construction operations, items will be stored in a weatherproof container with individual sealed packages of each type of item.
- 16.6.5 For construction operations, first aid kits will be checked before being sent out to each job and at least weekly.
- 16.6.6 First aid kits will consist of items that are adequate for the environment in which they are used.
- 16.6.7 Inspections will be conducted to ensure first aid stations are stocked for the environment in which they are servicing.
- 16.6.8 First aid supplies will be provided and monitored monthly. Monthly inspections of first aid kits will ensure items subject to expiration are replaced.
- 16.6.9 Drugs, antiseptics, eye irrigation solutions, inhalants, medicines or proprietary preparations will not be included in first aid kits unless specifically approved, in writing, by an employer authorized, licensed physician. Other supplies and equipment, if provided, will be in accordance with the documented recommendations of an employer authorized licensed physician upon consideration of the extent and type of emergency care to be given based upon the anticipated incidence and nature of injuries and illnesses and availability of transportation to medical care.

16.7 ADMINISTERING FIRST AID

- 16.7.1 Individual is unconscious and not breathing:
 - 16.7.1.1 Attempt to establish and maintain an open airway by using the *head tilt, chin lift* (placing the 4 outstretched and tightly aligned fingers under the bony part of the victim's chin and lifting upward) method to open the airway.
 - 16.7.1.2 Listen for breathing for 3 to 5 seconds. Look at the chest.
 - 16.7.1.3 Pinch nose shut while covering the victim's mouth with your own (use the disposable mouth shield) if not breathing. Give two full breaths. Watch the chest rise and fall.
 - 16.7.1.4 Check the pulse in the side of the neck (carotid pulse) for 5 to 10 seconds.
 - 16.7.1.5 Immediately send someone for an ambulance. If no heartbeat, start CPR. If there is a heartbeat, but still no breathing, perform *rescue breathing*:
 - 16.7.1.5.1 Pinch the nose shut and give one breath every 5 seconds.

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- 16.7.1.5.2 Continue for about twelve cycles and recheck the pulse.
- 16.7.1.5.3 Continue this cycle until the person becomes revived, another trained individual relieves you or emergency medical help arrives.
- 16.7.2 Individual is conscious, choking and having difficulty breathing:
 - 16.7.2.1 Have the victim stand up.
 - 16.7.2.2 Stand behind the victim and place your arms around him/her from around both sides of the waist from the rear.
 - 16.7.2.3 Make a fist with one hand and place the thumb inward just above navel.
 - 16.7.2.4 Grasp fist with free open hand and pull in and upward with simultaneously jerking thrusting motion. Continue until obstruction is dislodged or the victim becomes unconscious. This procedure is referred to as the *Heimlich Maneuver* and is the preferred method for dislodging an obstruction from the airway of a conscious adult.
- 16.7.3 Should the individual become unconscious during your efforts due to lack of oxygen:
 - 16.7.3.1 Place the victim on their back.
 - 16.7.3.2 Grab the chin and lower front teeth with one hand and lift. Try to sweep the obstruction out by taking a finger and hooking from one side of the throat to the other, toward you.
 - 16.7.3.3 Go to the lower half of the victim and straddle both thighs (the victim's legs should be close together).
 - 16.7.3.4 Place one hand on top of the other and lock the fingers. With the heel of the lower hand placed on the victim's abdomen just above the navel, give 6 to 10 quick, jerky thrusts in attempts to dislodge the obstruction.
 - 16.7.3.5 Give victim 2 full breaths observing if chest rises and falls. If the blockage remains, continue the procedure while EMS personnel are on the way or other means of emergency transportation has been summoned.
- 16.7.4 Individual's heart has stopped beating:
 - 16.7.4.1 Open the airway, using the head tilt/chin lift method.
 - 16.7.4.2 Pinch the nose shut and give two breaths.
 - 16.7.4.3 Check the pulse along the side of the neck.
 - 16.7.4.4 Take a position beside upper torso of the victim, while on knees if still not breathing.
 - 16.7.4.5 Trace along breast bone until the heel of hand is in center of the chest.

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- 16.7.4.6 Lock elbows with hands in a straight line even with shoulders.
- 16.7.4.7 Give 15 compressions of the chest only push down 1 ½" to 2".
- 16.7.4.8 Give two breaths.
 - 16.7.4.8.1 Repeat procedure until the victim regains consciousness, another trained worker assists or emergency personnel arrive to take over.
- 16.7.5 Care for burns:
 - 16.7.5.1 Stop the burning – Put out flames or remove the victim from the source of the burn.
 - 16.7.5.2 Cool the burn – Use large amounts of cool water to cool the burned area. Do not use ice or ice water other than on small superficial burns. Ice causes body heat loss. Use whatever resources are available—tub, shower, or garden hose, for example. You can apply soaked towels, sheets or other wet cloths to a burned face or other areas that cannot be immersed. Be sure to keep the cloths cool by adding more water.
 - 16.7.5.3 Use a dry, sterile dressings or a clean cloth cover the a third degree burn or second degree burn with open blisters, and a moist sterile dressing for first degree burns or second degree burns with closed blisters. Covering the burn helps keep out air and reduces pain. Covering the burn also helps prevent infection. If the burn covers a large area of the body, cover it with clean, dry sheets or other cloth.
- 16.7.6 Burns from lightning: Besides burns, lightning can also cause nervous system damage, broken bones and loss of hearing or eyesight. Victims sometimes act confused and suffer memory loss. They may describe what happened as getting hit on the head or hearing an explosion. Use common sense during thunderstorms. If you see a storm approaching in the distance, do not wait until you are soaked to seek shelter.
- 16.7.7 When an employee sustains a chemical burn to the eyes, the eyes will be flushed with clean running water for at least 15 minutes. Both eyes are to be bandaged prior to transport to the hospital or medical treatment facility. Unused eyewash solution should be discarded.
- 16.7.8 Care and control of bleeding:
 - 16.7.8.1 Cover wound with dressing and press firmly against the wound with hand.
 - 16.7.8.2 Elevate the arm above the level of the heart.
 - 16.7.8.3 Cover dressings with a roller bandage.
 - 16.7.8.4 If bleeding does not stop:
 - 16.7.8.4.1 Apply additional dressing.
 - 16.7.8.4.2 Squeeze artery against bone.
 - 16.7.8.5 If bleeding is from the leg, press with heel of hand where leg bends at hip.

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16.7.9 Insect bites/Stings

16.7.9.1 Contractor personnel who work outdoors must be trained in the signs, symptoms and control measures for insect bites and stings.

16.7.9.2 Medical treatment is immediately needed if the victim experiences:

16.7.9.2.1 Breathing difficulties

16.7.9.2.2 Facial swelling

16.7.9.2.3 Rapid pulse

16.7.9.2.4 Loss of conscious

16.7.9.3 Precaution methods include:

16.7.9.3.1 Wearing light colored clothing to see ticks more easily.

16.7.9.3.2 Wear a long-sleeved shirt, long pants and a hat.

16.7.9.3.3 Use an insect repellent and follow the directions for use. Personnel must read on cautionary labeling.

16.7.10 Venomous snakes/Spiders

16.7.10.1 Identify the snake or spider if possible.

16.7.10.2 Call for an ambulance to get anti-venom to the victim.

16.7.10.3 Apply direct pressure over the bitten area.

16.7.10.4 Wrap tightly with bandages.

16.7.10.5 Immobilize the bitten limb.

16.7.10.6 Do not apply oral suction to the bite.

16.7.10.7 Do not use a tourniquet.

16.7.10.8 Do not remove the bandage once it is on.

16.7.10.9 Do not cut into bite marks.

16.7.11 Poison ivy is contracted by direct or secondhand contact with the poison ivy plant, the oil is found on the leaves, vines and roots of the plant, and causes the allergic reaction. If contractor personnel come in contact with poison ivy they are to:

16.7.11.1 Rinse with cold water within one hour.

16.7.11.2 Wipe with alcohol within six hours.

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16.7.11.3 Apply antihistamine or cortisone cream.

16.8 INCIDENT PROCEDURES

- 16.8.1 For severe incidents call 9-1-1 and request the paramedics.
- 16.8.2 Employees must report all work related injuries to their supervisor immediately. Even if they do not feel that it requires medical attention. Failure to do so may result in a delay of Workers' Compensation benefits and disciplinary action.
- 16.8.3 The safety director will determine whether or not outside medical attention is needed. When uncertainty exists, the employee will be sent for professional medical care.
- 16.8.4 If employee refuses treatment, the safety director must still complete an *Incident Report* in case complications arise later. It will state *Medical Attention Refused* and employee will sign.
- 16.8.5 If the employee cannot transport themselves for any reason, transportation will be provided.
- 16.8.6 In the event of a serious incident involving hospitalization for more than 24 hours, amputation, permanent disfigurement, loss of consciousness or death, contact the main office by phone. Contact must also be made with the nearest federal or state (if applicable) OSHA office.

16.9 EMERGENCY TELEPHONE LISTING

- 16.9.1 Emergency telephone numbers will be maintained at ZARNAS COMPANIES office and on temporary jobsites, so that EMS treating medical center and physician can be contacted in the event of an emergency.
- 16.9.2 Whenever an employee has to be transported to a clinic, hospital or other treatment facility, the safety director or supervisor will accompany the injured employee to the treatment facility and remain with him until he is either discharged or admitted. The employee should not be permitted to drive from the treatment facility while under the influence of medication and if possible, should either be transported home by the supervisor or a family member.

16.10 RETURN TO WORK

- 16.10.1 The purpose of the return to work procedures is to assist potential employees and employees in transition from absence from work due to a medical condition, disability and transitional duty to return to work and to ensure that employees are able to perform their jobs without hazard to themselves or coworkers. Modified work will be offered, wherever possible, to employees who are unable to return to their regular duties following a workplace injury or illness.
- 16.10.2 Employee activities and behaviors will be monitored to determine if they should be removed from the worksite. Supervisors have the responsibility of taking appropriate actions to prevent loss.
- 16.10.3 Supervisors will manage sick leave and workers compensation leave in accordance with ZARNAS COMPANIES policies.
- 16.10.4 At any time, following an illness or injury (whether it is work related or not), a supervisor or employee may contact the project manager for advice.

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- 16.10.5 Where a worker has been absent from work for more than eight weeks and has indicated that they intend to resume work, the supervisor will:
 - 16.10.5.1 Contact worker to confirm the date of resumption of duties
 - 16.10.5.2 Advise worker that they require a medical clearance (this will include a statement from the treating doctor indicating that they are fit to resume work and provide details of any limitations on that return to work)
 - 16.10.5.3 Ascertain any special needs or flexible working arrangements that may be required to facilitate the return to work
 - 16.10.5.4 Advise the project manager
 - 16.10.5.5 Advise worker if there is to be a delay in their return to work date. In some circumstances, the worker may not be able to resume work until suitable support measures have been put in place.
- 16.10.6 Depending on individual circumstances, the project manager may consult the worker, refer the matter to other specialist staff, such as the safety department and develop a return to work plan in consultation with the worker, supervisor or other relevant parties.
- 16.10.7 Where a return to work plan is provided, both the worker and the jobsite must adhere to the plan. Any variations to the plan will be facilitated by the project manager.
- 16.10.8 If return to work does not result in the resumption of pre-injury or illness duties within a reasonable period of time, other employment options will be explored with the worker. A review date will be incorporated into the return to work plan.
- 16.10.9 Drug and alcohol testing will be performed, as prescribed by ZARNAS COMPANIES *Drug-free Workplace* policy.
- 16.10.10 ZARNAS COMPANIES will retain the investigation report and other records regarding work related incidents to help recall information about the situation at a later date and demonstrate due diligence. Worker's compensation, medical records and communication with the injured worker regarding return to work/transitional duty work are also maintained.
- 16.10.11 Right to privacy is acknowledged. ZARNAS COMPANIES will not provide any information obtained in relation to return to work to any person who does not have a lawful purpose for requiring the material. Records are kept by ZARNAS COMPANIES strictly on a need-to-know basis. The records are maintained in a locked location.

16.11 POST INJURY MANAGEMENT/TRANSITIONAL DUTY

- 16.11.1 If a primary care physician determines the need for transitional duty, HR and the worker's supervisor will be notified. HR and supervisor will work with employee on transitional duty program until the injury is healed and there is no danger of future injury to the employee.
- 16.11.2 ZARNAS COMPANIES provides a transitional duty program to all eligible employees who experience an occupational injury or illness on the job that causes short-term disability. This is a

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temporary and transitional work situation. The goal is to assist an injured employee to recover and return to his/her position as quickly as possible. Employees currently on disability roles are assessed for eligibility in the transitional duty program.

- 16.11.3 ZARNAS COMPANIES will make arrangements with clinics that specialize in occupational health and recommend injured employees seek treatment there. Injured employees should take a letter that outlines the company's modified work opportunities with them.
- 16.11.4 Workers are informed of the company's transitional duty program through safety meetings, reviewing the policy during new employee orientation and having the policy available to employees for review.
- 16.11.5 ZARNAS COMPANIES will allow eligible employees to utilize a period of transitional duty work in the event that the employee cannot physically return to his/her previous job. The transitional duty program will allow the employee to work at a modified position, subject to a periodic review of the employee's compliance with the eligibility requirements.
- 16.11.6 Eligibility requirements
 - 16.11.6.1 Incident was reported according to policy.
 - 16.11.6.2 Injured worker is temporarily unable to perform his/her previous job.
 - 16.11.6.3 Transitional duty work is available.
 - 16.11.6.4 Employee participates in treatment and follows physicians' orders and recommendations.
 - 16.11.6.5 Treating physician has not yet released employee to return to previous position.
 - 16.11.6.6 Employee demonstrates cooperation and a desire to return to previous position.
- 16.11.7 Transitional duty will be meaningful to the worker and the company and consistent with work restrictions outlined by the. Transitional duty work being offered will be consistent with healthcare provider restrictions. Supervisors must be made aware of the restrictions to ensure the modified work meets the healthcare provider's orders. Workers must ensure that changes in the scope of the transitional duty must adhere to specified medical restrictions.
- 16.11.8 Jobs are assessed to determine which jobs can be performed by persons working under specific restrictions. Physical demands are assessed for transitional duty jobs to ensure they can be performed safely by injured employees. A list of jobs available to be performed for employees who are eligible for the transitional duty program is as follows:
 - 16.11.8.1 Shop housekeeping
 - 16.11.8.2 Assist in yard/shop
 - 16.11.8.3 Hot-shot driver/deliverer
 - 16.11.8.4 Inventory and inspect equipment, stock and parts

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16.11.8.5 Equipment maintenance

16.11.9 Injured employees are evaluated and if appropriate, temporarily placed in transitional duty assignments until they are able to resume normal duties. Transitional duty work will be gradually adjusted towards pre-injury responsibilities after each assessment.

16.11.10 Refusal of transitional duty work

16.11.10.1 Workers have the right to refuse modified work.

16.11.10.2 Workers need to sign the transitional duty offer *refusal* section and indicate reasons for refusal.

16.11.10.3 Workers must be made aware that by refusing a reasonable transitional duty offer that they may not be eligible for wage loss benefits through worker's compensation.

16.11.10.4 Report to Worker's Compensation that worker has refused transitional duty.

16.11.10.5 Maintain communication with injured workers to assess when they are capable of returning to work.

16.11.11 Transitional duty will consist of up to two weeks of transitional duty. Extension will be determined if necessary. ZARNAS COMPANIES will assist in coordinating medical treatment and involvement in the transitional duty program. Transitional duty progress will be evaluated regularly. In order to continue to participate, the employee must comply with all other conditions of employment (ex. attendance, drug testing, quality of work, etc.)

16.11.12 At the conclusion of the transitional duty period, ZARNAS COMPANIES will evaluate worker ability to return to a previous job using the transitional duty medical release. If it is determined that the worker is physically capable of returning to a previous position, they may be eligible for reinstatement into the previous position.

16.12 TRAINING

16.12.1 Employees should not attempt to rescue or treat an injured or ill employee unless they are trained and qualified to do so. If not, contact someone who is trained and qualified.

16.12.2 ZARNAS COMPANIES ensures that the employee will receive training specific to their assigned task. Training regarding the contents and location of first aid kits is provided when:

16.12.2.1 An employee is first employed

16.12.2.2 A change in work assignment requires updated first aid kit information

16.12.2.3 Periodically thereafter as required by this safety policy

16.12.3 In the absence of an infirmary, clinic or hospital in near proximity to the jobsite which is used for the treatment of all injured employees, a person or persons will be adequately trained to render first aid. Adequate first aid supplies will be readily available.

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- 16.12.4 First aid training is provided by an outside company. It will include classroom instruction that uses lecture, discussion, videotape and/or conference formats and/or this could be practical instruction that uses demonstration, practical exercise and/or hands on instruction formats.
- 16.12.5 After an employee has completed a training program, the trainer will determine whether the employee can safely perform first aid. ZARNAS COMPANIES HR department will be responsible for keeping records verifying certification of each employee who has successfully completed training. The safety director will also maintain copies.
 - 16.12.5.1 Each certificate is a valid certificate in first aid training and the first aid certification includes the name of the employee, the date of the training and the signature of the person who performed the training and evaluation.
- 16.12.6 Employees are retrained every two years as required to keep their knowledge and skills current.



GAS HAZARDS

17.1 PURPOSE

17.1.1 The purpose of this policy is to provide gas hazard training and detection equipment that meets federal standards. This policy supplements the ZARNAS COMPANIES *Respiratory Protection* policy that is in place in accordance with 29 CFR 1910.134.

17.2 CHARACTERISTICS

17.2.1 Natural gas can be potentially hazardous if improperly handled. When handled appropriately, natural gas is an extremely safe and reliable form of energy. Natural gas can cause fires and explosions if care is not taken.

17.2.2 Under most circumstances natural gas will be contained in piping systems. There are times when natural gases or liquids may be in the work environment due to the work being performed, such as purging or blowing down equipment or by accident.

17.2.2.1 For escaping gas to be a fire or explosion hazard, there must be gas (fuel) and air (oxygen) in the correct proportions and an ignition source.

17.2.2.2 Regardless of the circumstances, great care must be taken to minimize the amount of escaping gas and eliminate ignition sources.

17.2.3 Natural gas is a mixture of naturally occurring gaseous hydrocarbons. Natural gas found in utility pipelines contains over 90% methane, some ethane, propane and traces of other hydrocarbons and may also contain small amounts of water vapor, nitrogen, carbon dioxide and oxygen.

17.2.4 Natural gas is lighter than air and will rise when released into the atmosphere.

17.2.5 Natural gas is only flammable when mixed with air in certain concentrations.

17.2.5.1 Natural gas is flammable/combustible in mixtures of approximately 4% to 15% in air.

17.2.6 Natural gas is odorless in its natural state. Odorants are added to natural gas so that leaks can be detected by smell even in very small quantities.

17.2.7 Natural gas and added odorants are not toxic, but can cause suffocation due to the lack of oxygen if the natural gas is present in sufficient quantities to displace enough air in a breathing space.

17.3 NATURAL GAS HAZARDS

17.3.1 Fire due to burning gas.

17.3.2 An explosion can occur when uncontrolled gas is ignited in a confined space.

17.3.3 Asphyxiation or suffocation due to lack of oxygen that is caused by an excess of gas.

17.3.4 Blowing dirt and debris can be harmful to anyone in close proximity due to sudden and unexpected release of gas under pressure.

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17.3.5 Liquefied natural gas is natural gas cooled below its boiling point (-260°F). Hazards of LNG include:

17.3.5.1 Frostbite or severe burns to the skin from contact

17.3.5.2 Hypothermia from prolonged exposure

17.3.5.3 Asphyxiation due to displacing air

17.3.5.4 Lung damage from prolonged breathing of cold vapors

17.3.5.5 Fracturing of carbon due to brittleness of cold vapors

17.3.5.6 Failure of the pipe due to extreme pressure and a rapid release of product when LNG trapped in piping quickly vaporizes and expands

17.3.5.7 Slow dissipation of LNG vapors at temperatures of about -160°F

17.4 CONTROLS

17.4.1 For ZARNAS COMPANIES to achieve compliance we must first implement all feasible administrative and engineering controls. When such controls are not feasible, we will use protective equipment or other protective measures to keep the exposure of employees to air contaminants within the prescribed limits.

17.4.2 Odorants are nontoxic at the low levels required to odorize gas. In the liquid state, odorants are flammable and must be handled with proper care. Odorants are about as flammable as gasoline.

17.4.3 Contractor personnel must adhere to the following precautions when handling odorants:

17.4.3.1 Avoid breathing the odorant vapor

17.4.3.2 Keep away from heat and possible sources of ignition

17.4.3.3 Always provide adequate ventilation

17.4.3.4 Avoid contact with eyes or skin

17.4.3.5 Wear goggles, chemical protective gloves and clothing (consult SDS)

17.4.3.6 Dispose of empty containers properly

17.4.3.7 Use metallic containers with electrical grounding (consult SDS)

17.4.4 We conduct personal or area sampling for gases, vapors, fumes, dusts, and mists to measure worker exposures. Air sampling is needed to measure worker exposures and select appropriate engineering controls and respiratory protection.

17.5 USE, MAINTENANCE AND CARE OF GAS MONITORS

17.5.1 Employees will use a portable gas monitor as required in all potentially high gas hazard areas.

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- 17.5.2 Gas monitors must be calibrated prior to use per manufacturer's recommendations and contain a current calibration sticker on the monitor with the date of last calibration.
- 17.5.3 Bump test are required to be completed at the beginning of each day the monitor is in use per the requesting owner client and manufacturer's guidelines to insure the monitor is functioning correctly.
- 17.5.4 Only utilize monitors issued by either ZARNAS COMPANIES or by the owner client.
 - 17.5.4.1 No personal monitors are allowed.
- 17.5.5 Have the gas monitor on the outside of all clothing.
- 17.5.6 Check the calibration date prior to bump testing.
 - 17.5.6.1 If the calibration date is expired turn the unit in immediately and do not use.
- 17.5.7 Bump test each shift prior to using the monitor.
- 17.5.8 Monitors are sensitive equipment.
 - 17.5.8.1 Avoid physical damage
 - 17.5.8.2 Immediately report any monitor that does not appear to be performing as expected

17.6 EMERGENCY PLANS

- 17.6.1 ZARNAS COMPANIES will ensure employees are aware of owner client's contingency plans including evacuation routes and alarms. ZARNAS COMPANIES employees will participate in emergency evacuation drills and practice rescue procedures, if necessary.

17.7 TRAINING

- 17.7.1 All affected employees will receive gas hazards awareness training before their initial assignment and annually thereafter. This will be in conjunction with the ZARNAS COMPANIES *Respiratory Protection* training. Training will address, as a minimum:
 - 17.7.1.1 Gas characteristics, health effects, signs and symptoms of overexposure, locations of alarm stations, gas monitoring equipment, gas alarms, gas hazards (oxygen deficiency, oxygen enrichment, nitrogen enrichment, carbon monoxide, hydrogen sulfide), any plant or department specific gases of concern, personnel rescue procedures, PPE, use and care of self-contained breathing apparatus (SCBA), evacuation procedures and staging areas.
- 17.7.2 Gas hazard awareness training will be documented and available for review.



ENVIRONMENTAL/GENERAL WASTE MANAGEMENT

18.1 PURPOSE

18.1.1 The general waste management program is designed to manage the amount of waste generated by our company as well to ensure the proper disposal of waste. By reducing the amount of waste and properly disposing what waste is created it will benefit the health of our workers, as well as reduce detrimental effects on the environment.

18.2 GENERAL

18.2.1 If the debris generated during paint removal is classified as hazardous, the owner of the facility or structure is considered the generator of the debris for permitting purposes, and is required to obtain the EPA identification number. When contracted to do so, ZARNAS COMPANIES assures that all testing, handling, storage, transportation and/or disposal requirements are properly implemented.

18.2.2 When an independent firm is employed to perform any part of the contracted waste management responsibilities, the name and qualifications are available for owner review together with their waste handling program if it differs from the one outlined below.

18.2.3 ZARNAS COMPANIES is responsible for disposal of empty paint cans and non-hazardous debris.

18.3 WASTE REDUCTION

18.3.1 In order to reduce costs of disposal of wastes and the amount of waste added to the environment. One of the most important steps to manage wastes is to attempt to reduce the amount of waste that is generated. There are endless methods to minimize waste, but these are a few that our employees must make a conscious effort to adhere to.

18.3.1.1 Preplan jobs in order to use as much of products as possible in order to minimize overage.

18.3.1.2 If it is possible use electronic files. Print on both sides of pages whenever possible.

18.3.1.3 Use reusable cups or utensils instead of paper, plastic or styrofoam.

18.3.1.4 Use rechargeable batteries.

18.3.1.5 Purchase materials which will be able to be recycled once they are used.

18.3.1.6 If possible use milder materials when chemicals need to be used.

18.4 WASTE CONTAINMENT

18.4.1 ZARNAS COMPANIES must estimate the waste that will be generated prior to work being performed so that the need for containers and waste removal, if necessary, can be determined.

18.4.2 To ensure the proper disposal of waste it is necessary to have an adequate amount of waste receptacles for the job being performed. Whenever a job will take place a projected amount of waste and scrap materials must be established. Based on the amount of waste that will be generated by the task the proper amount, size and type of waste receptacles must be established and provided for the waste.



18.5 STORAGE AND HANDLING

- 18.5.1 Waste containers may be stored in the same general area of the facility, but must be separated and labeled for proper segregation of the waste which should be disposed of in the container. The area where the receptacles are stored should be in an area which would not subject them to damage which may cause a release of the contained material.
- 18.5.2 When containers are handled they should be treated with care and in a manner to minimize the potential for damage or spills which may impact the environment.
- 18.5.3 When waste containers are stored they should be kept with the lids, bins or spouts closed. This will protect the waste materials from being blown out from high wind conditions and also protect from water entering the container which may cause run-off of the waste. In cases where run-off may possibly occur, additional containment may be necessary to prevent the waste from escaping to the environment.
- 18.5.4 ZARNAS COMPANIES complies with 40 CFR 262 and 265, state and local regulations for the onsite handling and storage of all hazardous waste generated on projects.
 - 18.5.4.1 If project waste tests non-hazardous, non-hazardous provisions apply. In some states, lead containing debris which tests non-hazardous is assigned a unique classification, such as restricted waste.
 - 18.5.4.2 When ZARNAS COMPANIES utilizes steel grit recycling, applicable provisions of this policy are followed even though the debris may test non-hazardous by TCLP. Special disposal provisions are also recommended to owner.
- 18.5.5 All waste is deposited and sealed in containers or roll-offs concurrent with generation. The frequency of collection and storage of the paint removal waste depends on the rate of generation and containment techniques. As a minimum, the waste is collected and stored in containers at the end of each working day such that no waste is left exposed overnight.
- 18.5.6 ZARNAS COMPANIES uses compatible DOT approved containers for hazardous waste storage.
- 18.5.7 Storage drums have lids attached except when being filled. Drums are in good condition when brought on site and show no visible signs of rust or corrosion. Drums are sealed with tamper-resistant fasteners.
- 18.5.8 No container or roll-off is filled to a capacity in excess of that marked on the container or roll-off as the maximum dry volume capacity.
- 18.5.9 Drums containing potentially hazardous materials are placed on concrete or asphalt, or on pallets and tarps to prevent corrosion attack from moist soil. They are stored in accordance with state requirements in a protected area or within a room, with signs around the perimeter. The storage area is designed to prevent run-off of debris. When stored outside, the secure area is located on well drained ground, to the extent feasible, and away from any flood plain areas. Drums are covered to prevent rain accumulation in or on the drums.
- 18.5.10 Drums are stored in rows with no more than two drums high and two drums wide, with the labels on all eight drums facing outward.



18.5.11 Different types of waste (hazardous, restricted, and non-hazardous) are not co-mixed.

18.5.12 Hazardous waste storage is segregated from restricted waste and non-hazardous waste.

18.5.13 Hazardous waste is not stored on-site for more than 90 days as outlined in 40 CFR 262.34 for large quantity generators (100 kg per month or greater). The 90 day period begins when the first accumulation of waste is placed into a container. The date is clearly marked on the container. Even when the quantity of waste is less than 100 kg per month, the 90 day storage period is typically invoked, but in no case is this waste stored for longer than 180 days.

18.5.14 The containers are inspected weekly for leaks and corrosion.

18.6 SATELLITE STORAGE

18.6.1 If allowed by the project specification, hazardous waste might be stored at the paint removal site for a period of time prior to being transported to the secure storage area.

18.6.2 ZARNAS COMPANIES maintains an inventory of waste generation, type and disposal.

18.6.3 The waste in the satellite area is stored in drums or containers with the lids secured.

18.6.4 No more than 55 gallons of waste is stored in the satellite storage area.

18.6.5 Once the volume of waste exceeds 55 gallons, the excess is transported to the secure area in no more than three days.

18.7 LABELING

18.7.1 Until TCLP test results are received, containers are labeled as lead-containing debris. Hazardous waste labels are applied after the test results are received, if the debris tests hazardous. Samples are removed for testing as the first container is filled (see attached sample labels).

18.7.2 Each container or roll-off of hazardous waste is labeled with a US DOT ORM-D label in accordance with 40 CFR 262.34 and 49 CFR 172.304.

18.7.3 For compliance with 40 CFR 262.32, the label includes:

18.7.3.1 Generator Information

18.7.3.2 EPA ID No./Manifest Document No.

18.7.3.3 Accumulation Date

18.7.4 For compliance with 49 CFR 172.304, the label includes:

18.7.4.1 DOT Shipping Name (found in 49 CFR 172.101, Hazardous Material Table). For ORM-D waste, the proper DOT shipping name is *Hazardous Waste Solid, n.o.s.*

18.7.4.2 If the hazardous waste shipment exceeds the reportable quantity (RQ) as defined in Appendix A to 49 CFR 172.101 "List of Hazardous Substances and Reportable Quantities", the DOT shipping name should be preceded with RQ.



18.7.4.3 Hazard class (found in 40 CFR 172.101). For ORM-D wastes, the hazard class is 9.

18.7.4.4 The UN (United Nations) or NA (North America) Number (49 CFR 172.101). For hazardous waste solids, n.o.s., use NA 3077.

18.7.5 Prior to transport, each container or roll-off of hazardous waste is also labelled with DOT-specification diamond shaped decals indicating the hazard class/division of the contents. For ORM-D waste, the hazard class/division is Class 9.

18.7.6 Labeling is located away from other markings that could substantially reduce its effectiveness.

18.7.7 All containers are arranged so that hazard labels are visible at all times while onsite.

18.8 WASTE SAMPLING AND TESTING

18.8.1 ZARNAS COMPANIES assures that solid waste generated by paint removal activities is tested according to EPA Method 1311, Toxicity Characteristic Leaching Procedure (TCLP) as outlined in 40 CFR 261, Appendix II, unless otherwise dictated by state or local regulations.

18.8.2 In the case of chemical strippers, all liquids and sludge are also tested. When chemical strippers are used, the testing includes pH to determine its corrosivity.

18.8.3 Collection, handling and documentation of samples is carefully controlled.

18.8.4 The initial set of samples is removed for testing as the first container of debris is filled.

18.8.5 When waste from a single waste stream is less than 55 gallons, a minimum of 4 samples are removed.

18.8.6 When the waste from a given waste stream is greater than 55 gallons, and the waste is stored in 55 gallon containers:

18.8.6.1 A minimum of four random samples are removed from the first 55 gallon container.

18.8.6.2 A minimum of one sample is removed for each additional 55 gallon container.

18.8.6.3 When the waste from a single waste stream is stored in a gondola or roll off, a minimum of six random samples are removed for each box.

18.8.6.4 Not all of the samples collected above are tested.

18.9 SAMPLE COLLECTION PROCEDURE

18.9.1 Samples are collected in accordance with regulations.

18.9.2 Representative random samples of debris for each waste stream generated from the project are collected.

18.9.3 When samples are collected prior to containerizing the debris, simple random sampling is conducted by:



- 18.9.3.1 Overlaying the pile of debris with an imaginary grid (or drawing a grid into the debris with a shovel) consisting of squares which are then assigned a unique number.
- 18.9.3.2 Selecting squares at random using a random number table or other random technique and collecting a sample from each of the designated squares.
- 18.9.3.3 For quantities of debris which involve only a few gallons of waste, debris is thoroughly mixed and a simple grab sample taken using a core and quartering technique.
- 18.9.4 When samples are collected from in-process equipment (ex. grit recovery unit, air handling unit, vacuum recovery unit), the waste stream is randomly interrupted to collect the first sample. Based upon expected waste generation rates, additional samples are collected on a scheduled bases (systematic) in order to obtain the number of samples specified earlier.
- 18.9.5 When samples are collected after the debris is containerized, sampling is conducted using an thief or trier sampler. The sampling device is inserted to the bottom of the container and withdrawn to remove the sample.
- 18.9.6 Each sample consists of approximately 300 grams ($\frac{3}{4}$ pound), which is generally a cupful.
- 18.9.7 Each sample is logged, documented and labeled with a unique number, sample location and the name of the person collecting the sample. The lid is taped shut. The sample log is completed and a sample label attached.

18.10 LABORATORY ANALYSIS

- 18.10.1 Samples are submitted to an American Industrial Hygiene Association (AIHA) accredited laboratory for metals analysis or other qualified laboratory.
- 18.10.2 For each different waste stream, a minimum of four of the random samples collected are randomly selected for possible testing. For the waste to be classified as non-hazardous, the average of the four test results plus the confidence interval must be below 5 mg/L (in the case of lead).
- 18.10.3 Any one sample testing as hazardous causes the debris to be classified as hazardous. In this event, the remaining samples are not tested and the waste is considered to be hazardous or additional samples are analyzed. The average of the results of all of the samples tested plus the confidence interval must be below 5 mg/L (in the case of lead) for the waste to be classified as non-hazardous.
- 18.10.4 Other substances are taken into account which may cause debris to be classified as hazardous waste as defined in 40 CFR 261 (such as a pH < 2.0 or > 12.5 resulting in corrosivity).
- 18.10.5 Waste is classified as hazardous if after testing by the Toxicity Characteristic Leaching Procedure (TCLP), the leachate contains any of the 8 metals or other hazardous substances in concentrations above the limits established in 40 CFR 261.



EPA ID NO.	METAL	LEACHABLE THRESHOLDS
D004	Arsenic	5.0 mg/L
D005	Barium	100.0 mg/L
D006	Cadmium	1.0 mg/L
D007	Chromium	5.0 mg/L
D008	Lead	5.0 mg/L
D009	Mercury	0.2 mg/L
D010	Selenium	1.0 mg/L
D011	Silver	5.0 mg/L

18.10.6 Due to the nature of the waste stream (e.g. dry abrasive), testing for reactivity and ignitability is typically not performed.

18.11 REPORTING

18.11.1 ZARNAS COMPANIES provides the owner with results of TCLP testing. Laboratory results are provided to the owner within one week upon receipt.

18.11.2 Written reports of the waste sampling include the following information:

- 18.11.2.1 Name and location of jobsite
- 18.11.2.2 Date of sampling
- 18.11.2.3 Number of containers sampled, number of samples taken and number of samples analyzed
- 18.11.2.4 Name and address of laboratory used
- 18.11.2.5 Laboratory test procedure utilized
- 18.11.2.6 Laboratory test results, expressed in mg/L
- 18.11.2.7 Name of field technicians conducting the work

18.11.3 All pertinent information about the samples is entered into a permanent waste sampling log. This log contains detailed information such as:

- 18.11.3.1 Sampling locations
- 18.11.3.2 Field notes
- 18.11.3.3 Type of waste
- 18.11.3.4 Volume of samples
- 18.11.3.5 Total number of samples
- 18.11.3.6 Sampling methodology
- 18.11.3.7 Date and time of sample collection



18.11.3.8 Chain of custody form

18.11.3.9 Name(s) of the person/firm collecting the samples.

18.11.3.10 All records and reports, including sample chain of custody and TCLP test results are made available to the owner.

18.12 RECORDKEEPING

18.12.1 ZARNAS COMPANIES complies with all manifesting, certification and reporting requirements as outlined in 40 CFR 262; 40 CFR 268; state and local regulations.

18.12.2 The company maintains an inventory of waste generated, including type, volume and disposal.

18.12.3 ZARNAS COMPANIES advises the facility owner that in addition to federal requirements, a state specific manifest may have to be prepared. The manifest describes the waste, designates the facility permitted to handle the waste, includes an alternative facility and is signed by the generator, transporter and accepting facility.

18.12.4 When any hazardous waste is shipped off site for treatment, ZARNAS COMPANIES advises the facility owner that a biennial report must be submitted to the U.S. EPA Regional Administrator by March 1 for each even numbered year.

18.12.5 Copies of all records relating to sampling, testing and project specific requirements and hazardous waste handling and storage are maintained by ZARNAS COMPANIES for the length of project plus 3 years.

18.13 TRAINING

18.13.1 Employees will be instructed prior to beginning any job task of the proper handling of waste including spill response, proper disposal methods for the various types of waste that may be generated and in cleaning of reusable items and equipment prior to removal from site. Training is provided at least annually.

18.13.2 Employees will be made aware of any materials which will be classified as hazardous waste and will be given instructions on the proper disposal for such products. All waste should be properly segregated as instructed.

18.13.3 If recycling containers are available every attempt possible should be made to reuse or recycle the accepted materials rather than allow them to go to waste.

18.13.4 If there are any questions or doubts about the proper disposal of a material employees should ask their supervisor to help them properly dispose of the material.

HAND AND POWER TOOLS

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HAND AND POWER TOOLS

19.1 PURPOSE

19.1.1 The purpose of the policy is to establish and maintain a program to ensure that the hazards associated with using hand and portable powered tools are recognized and the necessary safeguards, education and PPE are provided for the protection of the employee.

19.2 GENERAL

19.2.1 All manufacturer safety practices must be employed while using tools. Employees must read, know and understand all safeguards prior to using equipment. If workers do not understand safe operation of a piece of equipment, they should notify the safety director to obtain clarification.

19.2.2 All required PPE must be worn at all times when using equipment.

19.2.3 Do not wear loose clothes, ties, jewelry or gloves that could get caught in the machinery. Keep body parts and clothes away from the point of operations.

19.2.4 All tools and equipment will be visually inspected prior to use and all safety devices will be installed and properly adjusted.

19.2.5 Tools will not be used beyond the design capacity intended by the manufacturer where such use may create a hazard to persons.

19.2.6 Tool identified as unsafe will be locked or tagged to render them inoperable or be physically removed from its place of operation.

19.2.7 Iron or steel hand tools may produce sparks that can be an ignition source around flammable substances. Where this hazard exists, spark-resistant tools made of non-ferrous materials should be used where flammable gases, highly volatile liquids and other explosive substances are stored or used.

19.3 HAND TOOLS

19.3.1 Hand tools must be inspected on a regular schedule. Inspect each tool prior to each use.

19.3.2 Do not use tools with a loose or splintered handles.

19.3.3 Do not tape cracked or split handles.

19.3.4 Use the right tools for the job (ex. using a screwdriver for a chisel).

19.3.5 Do not alter tools without supervisor permission. All alterations must meet the standard.

19.3.6 Hand tools cannot be used as a hammer.

19.3.7 Tag and remove from the work area any tool that does not meet the requirements.

19.3.8 Tools will be maintained in a safe condition whether provided by employer or the employee.

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- 19.3.9 All hand tools such as chisels, punches, etc. which develop *mushroomed* heads must be taken out of service and reconditioned.
- 19.3.10 Handles on hammers, axes and similar equipment that are cracked or fractured should be replaced prior to use. Care should be taken to assure the head is properly and securely attached.
- 19.3.11 Wrenches whose handles are bent or whose gripping surfaces are worn should be replaced.
- 19.3.12 Screwdrivers that are bent or whose ends are chipped should be replaced.
- 19.3.13 Tools should be stored in a secure, dry location where they will not be tampered with.
- 19.3.14 Tools should be stored in such a way that sharp edges do not present a danger when reaching into tool cribs and storage areas.
- 19.3.15 Tool cutting edges should be sharp so the tool will move smoothly and not bind.
- 19.3.16 All handles should be free of burs and splinters and should be firmly attached to the working head of the tool.
- 19.3.17 The proper tool will be used for each job.
- 19.3.18 Damaged tools will be removed from service until repaired or replaced.
- 19.3.19 Cheaters or hammers will not be used on adjustable wrenches.
- 19.3.20 Files will be equipped with handles. Files will not be used to pry.
- 19.3.21 Hand tools will be kept in safe working condition.
- 19.3.22 Hand tools will be properly stored and out of the way when not in use.
- 19.3.23 Uninsulated conductive tools will not be used in or around live electrical wiring.
- 19.3.24 Tools with mushroom heads will not be used.
- 19.3.25 Screwdrivers will not be used as chisels or pry bars.
- 19.3.26 Valve wrenches will not be left protruding into walkways or work areas.
- 19.3.27 The wooden handles of tools will be kept free of splinters or cracks and will be kept tight in the tool. If the wooden handle becomes cracked or damaged it must be replaced with a new handle. Homemade handles will not be used.
- 19.3.28 Knives will not be used as screwdrivers or pry tools. Knives will be of the self-locking or straight blade type.

19.4 PORTABLE POWER OPERATED/ELECTRIC TOOLS

- 19.4.1 All grinders, saws and similar equipment must be fitted with appropriate machine guarding as specified by the manufacturer.

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- 19.4.2 The adjustable tongue on the top side of the grinder must be properly guarded to prevent physical contact by the operator.
- 19.4.3 All corded electrically operated tools and equipment must be effectively grounded by either a grounding prong or an approved double-insulated case. Inspect all prongs to ensure they are not bent or otherwise damaged and all cases to ensure they are not cracked or damaged.
- 19.4.4 All electric cords must be in good condition; free of frays or other physical defects.
- 19.4.5 Portable electric tools must be grounded and inspected before use, including the power cord and plug. The electric cord must not have insulation showing at the plug or at the tools. No cuts or breaks in the cord. No electric tape to cover up bad insulation.
- 19.4.6 To protect users from shock and burns, electric tools must have a 3 wire cord with a ground and be plugged into a grounded receptacle, be double insulated or be powered by a low voltage isolation transformer.
- 19.4.7 The grounding prong must never be removed from the plug.
- 19.4.8 Employees that use electric tools in construction areas or wet areas must be protected by ground fault circuit interrupters.
- 19.4.9 Portable electric tools will not be lowered, lifted or carried by their cords.
- 19.4.10 Never yank the cord to disconnect it from a receptacle.
- 19.4.11 Keep cords away from heat, oil, and sharp edges.
- 19.4.12 The power cord on portable tools will always be unplugged before changing parts.
- 19.4.13 Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters.
- 19.4.14 Face shields will be worn when using portable grinders and cut-off saws.
- 19.4.15 Handheld power tools will be equipped with controls that require constant finger pressure to operate the tool. Positive trigger locks on hand-held power tools are not permitted and, if equipped, must be removed.
- 19.4.16 Remove tool from air impact wrench before bleeding down hose.
- 19.4.17 All fuel powered tools will be stopped and allowed to cool before refueling or servicing.
- 19.4.18 Tool safety clips or retainers will be securely installed and maintained on pneumatic and electric impact tools.

19.5 ABRASIVE WHEEL EQUIPMENT

- 19.5.1 The work rest will be within an inch of the wheel.

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- 19.5.2 The adjustable tongue on the top side of grinder must be within $\frac{1}{4}$ inch of the wheel.
- 19.5.3 The grinder is mounted in such a way that it is secure and will not shift or tip.
- 19.5.4 *ON/OFF* control switches are clearly marked in red and readily accessible to the operator for easy deactivation of equipment in case of emergency.
- 19.5.5 The maximum RPM rating of the grinder is clearly posted and the maximum rating of the wheel does not exceed the grinder rating.
- 19.5.6 Grinding wheels are not cracked or otherwise damaged.
- 19.5.7 Grinders that use a coolant must be equipped with splash guards to prevent coolant from coming into contact with the operator.

19.6 PNEUMATIC AND POWDER ACTUATED TOOLS

- 19.6.1 Powder actuated tools are stored in their own locked container when not being used.
- 19.6.2 All powder actuated tools will be left unloaded until they are actually used.
- 19.6.3 Only trained and authorized employees will use powder actuated tools. Only employees who have been trained in the safe operation of the particular tool in use will be permitted to operate a powder actuated tool.
- 19.6.4 The user must select a powder level, high or low velocity, that is appropriate for the powder actuated tool and necessary to do the work without excessive force.
- 19.6.5 The powder actuated tools will be inspected and tested before each use prior to loading to determine that it is clean, that all moving parts operate freely and are properly lubricated, that the barrel is free from obstructions, and that the safety devices are in proper working condition.
- 19.6.6 All powder actuated tools will be used with correct shield, guard or attachment recommended by the manufacturer.
- 19.6.7 The muzzle end of the tool must have a protective shield or guard centered perpendicular to and concentric with the barrel to confine any fragments or particles that are projected when the tool is fired. A tool containing a high-velocity load must be designed not to fire unless it has this kind of safety device.
- 19.6.8 To prevent the tool from firing accidentally, two separate motions are required for firing. The first motion is to bring the tool into the firing position, and the second motion is to pull the trigger.
- 19.6.9 Any powder actuated tools that is not in proper working order or that develops a defect during use will be immediately removed from service and not used until properly repaired in accordance with their manufacturer's specifications.
- 19.6.10 Do not use a tool in an explosive or flammable atmosphere.

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- 19.6.11 Inspect the tool before using it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions and has the proper shield, guard and attachments recommended by the manufacturer.
- 19.6.12 Do not load the tool unless it is to be used immediately.
- 19.6.13 Do not leave a loaded tool unattended.
- 19.6.14 Keep hands clear of the barrel end.
- 19.6.15 Never point the tool at anyone.
- 19.6.16 Powder actuated tools will not be loaded until just prior to the intended firing time.
- 19.6.17 Powder actuated tools will not be pointed at any employee whether loaded or unloaded.
- 19.6.18 Hands will be kept clear of the open barrel end.
- 19.6.19 Powder actuated tools will not be used in an explosive or flammable atmosphere.
- 19.6.20 In case of a misfire, employees will use the correct method for a specific powder actuated tool to remove the misfire.
- 19.6.21 Powder actuated tool cabinets will be kept free of loose loads and other debris.
- 19.6.22 When using powder actuated tools to apply fasteners, additional procedures must be followed:
 - 19.6.22.1 Do not fire fasteners into material that allows fasteners to pass through to other side.
 - 19.6.22.2 Do not drive fasteners into very hard or brittle material that might chip or splatter or make the fasteners ricochet.
 - 19.6.22.3 Always use an alignment guide when shooting fasteners into existing holes.
 - 19.6.22.4 When using a high velocity tool, do not drive fasteners more than 3 inches from an unsupported edge or corner of material such as brick or concrete.
 - 19.6.22.5 When using a high velocity tool, do not place fasteners in steel any closer than ½ inch from an unsupported corner edge unless a special guard, fixture or jig is used.
- 19.6.23 Fasteners used in powder actuated tools will be only those specifically manufactured for that use.
- 19.6.24 Fasteners will not be driven into spalled areas, very hard or brittle materials or easily penetrated materials.
- 19.6.25 Pneumatic tools must be checked to see that the tools are fastened securely to the air hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool must also be used and will serve as an added safeguard.
- 19.6.26 When using air-operated tools, make certain that the supply pressure does not exceed the working pressure of the tool.

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- 19.6.27 All abrasive blast equipment will be equipped with *deadman* controls.
- 19.6.28 Air hose and connections used for air tools will be designed for the service for which they are used. All connections that require safety pins will be in place prior to turning on the air pressure.
- 19.6.29 Only heavy-duty impact-type sockets will be used on powered impact wrenches.
- 19.6.30 When compressed air is used for parts cleaning purpose, reduce the nozzle pressure to 30 psi.
- 19.6.31 Do not use air hoses for hoisting or lowering tools.
- 19.6.32 Do not use compressed air for cleaning clothes or part of the body.
- 19.6.33 When using pneumatic tools, a safety clip or retainer must be installed to prevent attachments such as chisels on a chipping hammer from being ejected during tool operation.
- 19.6.34 Pneumatic tools that shoot nails, rivets, staples or similar fasteners and operate at pressures more than 100 psi must be equipped with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface.
- 19.6.35 Eye protection is required, and head and face protection is recommended for employees working with pneumatic tools.
- 19.6.36 Screens must also be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers or air drills.

19.7 HYDRAULIC POWER TOOLS

- 19.7.1 The fluid used in hydraulic power tools must be an approved fire resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed.
- 19.7.2 The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters and other fittings must not be exceeded.
- 19.7.3 All jacks, including lever and ratchet jacks, screw jacks and hydraulic jacks, must have a stop indicator and the stop limit must not be exceeded. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack and the load limit must not be exceeded.
- 19.7.4 A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Put a block under the base of the jack when the foundation is not firm and place a block between the jack cap and load if the cap might slip. To set up a jack, make certain of the following:
 - 19.7.4.1 The base of the jack rests on a firm, level surface
 - 19.7.4.2 The jack is correctly centered
 - 19.7.4.3 The jack head bears against a level surface
 - 19.7.4.4 The lift force is applied evenly

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- 19.7.5 All jacks must be lubricated regularly. In addition, each jack must be inspected according to the following schedule:
 - 19.7.5.1 For jacks used continuously or intermittently at one site, inspected at least once every 6 months
 - 19.7.5.2 For jacks sent out of the shop for special work, inspected when sent out and inspected when returned
 - 19.7.5.3 For jacks subjected to abnormal loads or shock, inspected before use and immediately thereafter.

19.8 EQUIPMENT GUARDING

- 19.8.1 Machine guards, as appropriate, must be provided to protect the operator and others from the point of operation, in-running nip points, rotating parts and flying chips and sparks.
- 19.8.2 Machine guards will be clean, secure and so arranged so they do not offer a hazard in their use.
- 19.8.3 All moving chains, gears, pulleys, etc. will be properly guarded.
- 19.8.4 Guards must be installed on all tools that require a guard. Guards cannot be manipulated in such way that will compromise the protection in which was intended. Guarding will meet the ANSI B145.1 standard.
- 19.8.5 Handheld power tools MUST be equipped with a switch that is manually held in the on position and power is shut off when the switch is released.
- 19.8.6 Emergency *STOP* buttons will be colored red and easily accessible to operator in an emergency.
- 19.8.7 All non-current-carrying metal parts of electric equipment will be properly grounded.
- 19.8.8 Sufficient clearance must be maintained around equipment to ensure safe operation, maintenance and waste removal.
- 19.8.9 Guards will be substantially secured in place.
- 19.8.10 Portable powered tools will not be placed in service until all guards are in place and checked to ensure that they are secured.
- 19.8.11 Portable powered tools will be shut down and de-energized before any guards are removed.

19.9 MACHINE TOOLS

- 19.9.1 Machine tools will be guarded in accordance with the American National Standards Institute guidelines for the specific machine.
- 19.9.2 Machine tools will not be left running unattended.
- 19.9.3 Manual adjustment and gauging of work will not be done while the machine is running.

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- 19.9.4 Hands will not be used for removing chips and shavings from machinery.
- 19.9.5 Material on a drill press will be securely clamped.
- 19.9.6 Cutting tools, drills, chuck keys, wrenches, etc., should be removed from the machine after the work is completed.
- 19.9.7 A *push stick* will be used when pushing short boards through table saws.
- 19.9.8 Pipe threaders will be equipped with a momentary contact, guarded, foot switch.

19.10 BENCH GRINDERS

- 19.10.1 Bench grinders, when equipped with an abrasive wheel, will be equipped with a work rest adjusted to within $\frac{1}{8}$ " of the wheel and a tongue guard adjusted to within $\frac{1}{4}$ " of the wheel.
- 19.10.2 Rags will not be used to hold objects while grinding or buffing.
- 19.10.3 Vice grip pliers or other suitable means will be used to hold small objects on grinders when hands are in close proximity to the grinding wheel.
- 19.10.4 Only one person will use a grinder at any one time.
- 19.10.5 Grinding wheels will be inspected for cracks or other defects prior to installation and use.
- 19.10.6 A ring test should be conducted.
- 19.10.7 Signs reading *Face Shield Required* are to be posted in plain view of pedestal bench grinders and drill presses.

19.11 PERSONAL PROTECTIVE EQUIPMENT

- 19.11.1 Proper personal protective equipment must be used all times. (ex. using hand tools and exposed to hazard of falling, flying, abrasive, splashing or exposed to harmful dust, fumes mists vapors or gases will use the proper PPE).
- 19.11.2 Noise is another hazard associated with pneumatic tools. Working with noisy tools such as jackhammers requires proper, effective use of appropriate hearing protection.
- 19.11.3 When using powder actuated tools, an employee must wear suitable ear, eye and face protection.
- 19.11.4 A face shield will be worn when operating a powder actuated tool.

19.12 TRAINING

- 19.12.1 Training will be provided for operators of powder actuated tools.
- 19.12.2 Pre-use inspection will be completed to determine that the powder actuated tool is clean, that all moving parts operate freely and that the barrel is free from obstructions.

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- 19.12.3 When a tool develops a defect during use, the operator will immediately cease to use it and will notify his supervisor.
- 19.12.4 Tools will not be loaded until just prior to the intended firing time and the tool will not be left unattended while loaded.
- 19.12.5 The tool, whether loaded or empty, will not be pointed at any person and hands will be kept clear of the open barrel end.
- 19.12.6 In case of a misfire:
 - 19.12.6.1 The operator will be shown the proper way to remove the misfire.
 - 19.12.6.2 The operator will hold the tool in the operating position for at least 15 seconds and will continue to hold the muzzle against the work surface during disassembly or opening of the tool and removal of the powder load.
- 19.12.7 Neither tools nor powder charges will be left unattended in places where they would be available to unauthorized persons.
- 19.12.8 Securing the area behind the site of the application when using a powder actuated tool.

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HAZARD COMMUNICATION

20.1 PURPOSE

20.1.1 The purpose of the policy is to establish and maintain a program to ensure that the hazards associated with using hand and portable powered tools are recognized and the necessary safeguards, education and PPE are provided for the protection of the employee.

20.1.2 The purpose of this policy is to ZARNAS COMPANIES against exposure to hazardous chemicals in the workplace.

20.2 DEFINITIONS

20.2.1 *Hazardous chemical* - any chemical which is a physical hazard (combustible, explosive, flammable, unstable, water reactive, etc.) or a health hazard (carcinogens, toxic agent, irritants, corrosives, sensitizers, etc.)

20.3 RESPONSIBILITIES

20.3.1 ZARNAS COMPANIES will provide workers with information and training on hazardous chemicals in their work areas at the time of their initial assignment and whenever a new hazard is introduced. That information will include the requirements of the hazcom standard, any operations in their work area where hazardous chemicals are present and location of written hazcom program.

20.3.2 Employer must communicate, develop, implement and maintain this program at each worksite, with any involved employee.

20.3.3 Supervisor ensures personnel are properly trained as appropriate for their position and responsibility.

20.3.4 Employees have the responsibility to learn and understand the provisions of the company's hazard communication program.

20.3.5 Employees should understand how to access and resource safety data sheets and should know how to seek help for clarification when warranted.

20.3.6 New employees have the responsibility for maintaining a close and inquisitive relationship with their supervisor and other more experienced employees. The first few days of an employee's employment will be critical to the overall safety efforts of the company and to the employee's acclimatization to prescribed work procedures.

20.3.7 An inventory list of all hazardous chemicals will be maintained by safety director. This is to assure that SDSs exists for all hazardous chemicals in the workplace.

20.4 GENERAL REQUIREMENTS

20.4.1 A written hazard communication program will be developed, implemented and maintained at each workplace that describes how labels and other forms of warning, safety data sheets and employee information will be met.

20.4.2 All chemicals will be checked in and verified to be an approved chemical.

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- 20.4.3 The safety director maintains a list of all hazardous materials used in our operations. This list contains the name of the product, the type of product (solvent, adhesive etc.) and the name and address of the manufacturer.
- 20.4.4 If required to handle unfamiliar chemicals, notify supervision or safety director.
- 20.4.5 Avoid inhaling vapors and fumes. Remain upwind of escaping fumes.
- 20.4.6 Do not attempt to siphon by mouth, via suction, any liquids from tank or containers.
- 20.4.7 The safety director will annually review new and existing jobs to ensure potential exposure to toxic or hazardous substances are properly identified.
- 20.4.8 Copies of the program, a listing of hazardous chemicals and material safety data sheets will be available 24 hours a day. When employees are working offsite they will have an inventory list and SDSs that they can bring to the site with them. SDSs must be available, upon request, to employees, their designated representative, the assistant secretary and the director.

20.5 LABELS

- 20.5.1 Labels are to be on all hazardous chemical containers. Labels may be written, printed or affixed to containers of hazardous chemicals. Labels must contain appropriate hazard warnings and state the identity of the chemical as it appears on the SDSs. Shipped containers must also have the manufacturers name and address.
- 20.5.2 All employees who transfer hazardous chemicals into portable containers will ensure the containers are appropriately labeled. Each label will identify warnings and the name and address of the chemical manufacturer or other responsible party. Employees will use the National Fire Protection Association (NFPA) 704 or Hazardous Material Identification System (HMIS) labels on containers. Employees will have access to labels at all times onsite and offsite.
- 20.5.3 Manufacturer's labeling systems provide, at a minimum: the identity of the chemical, appropriate hazard warnings, and the name and address of the manufacturer. New GHS compliant labels are also starting to become available. These labels have a standardized format and must include, at a minimum, the following content: a product identifier, signal word, hazard statement(s), pictogram(s), precautionary statement(s) and the name, address and telephone number of the chemical manufacturer, importer or other responsible party.
- 20.5.4 Under the revised Hazard Communication standard, manufacturers are permitted to supply chemicals with labels that conform to either the old or newly revised standard during the transition period; after which time, GHS compliant labeling will become mandatory. For this reason, operating units must be familiar with both the old and new labeling requirements in the interim.
- 20.5.5 Hazardous chemical container labels may not be removed or defaced until the container has been cleaned or purged of its contents and there is no longer any hazard associated with the container. Labels from containers that contain P-listed waste/residue are not to be removed. These containers should be turned over to the safety director for proper disposition. DOT shipping labels on containers are not removed until all residues have been removed from the container.



20.6 SAFETY DATA SHEETS

- 20.6.1 SDSs are to be written or printed material containing information known about the chemical. SDSs must include both the chemical and common names. SDSs must list the following: physical and chemical characteristics, hazards, health hazards including signs and symptoms of exposure, any application exposure limits, the date of preparation of the SDS, appropriate emergency actions, first aid procedures, known control measures and applicable precautions for safe use and handling, including appropriate personal protective equipment and the name of the chemical manufacturer, importer, distributor or other party responsible for preparing or distributing the SDS.
- 20.6.2 Chemical manufacturers are responsible for developing SDSs. Employers will have an SDS for each chemical used. SDSs will be maintained by the safety director. They are to identify hazards and the need for employee training. SDSs must be readily accessible to employees at all times on all shifts and jobsites. SDSs will be known beforehand of all outside jobsite or multi-employer sites.
- 20.6.3 SDSs are given to the safety director before a new chemical comes onto the facility. There must be SDSs for all required chemicals at ZARNAS COMPANIES. It is the responsibility of the purchasing department to have all new products reviewed by the safety director before it arrives at a facility. It is the shipping department's responsibility to ensure that all chemicals have SDSs before it comes into the building. Employees will have access to SDSs on all shifts and jobsites.

20.7 NON-ROUTINE TASK

- 20.7.1 Employees may perform non-routine tasks that involve the use of hazardous chemicals or processes. Before conducting non-routine tasks, supervisors will inform employees of:
 - 20.7.1.1 The specific hazards associated with the performance of the task
 - 20.7.1.2 Protective measures that must be used
 - 20.7.1.3 Measures that the department has taken to lessen these hazards (ventilation, personal protective equipment or the presence of another employee)
 - 20.7.1.4 Specific emergency procedures to be used in the event of an accident or injury

20.8 EMERGENCY RESPONSE

- 20.8.1 Employees who witness or are involved in an overexposure incident or exposure to any hazardous substance in use by company employees, should dial the 9-1-1 emergency response number to summon local emergency personnel immediately.
- 20.8.2 Emergency showers and eyewash fountains will be installed in strategic locations. These stations will be easily accessed and clearly posted with effective signs. Personnel working with toxic, corrosive or flammable materials will be aware of these locations or have plenty of fresh water immediately available when handling chemicals.
- 20.8.3 If any corrosive or toxic substances contact the skin or eyes, flush the affected parts for 15 to 20 minutes with clean running water. Seek medical attention as quickly as possible.
- 20.8.4 Contaminated clothing will be removed promptly.

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- 20.8.5 Chemical spills should be contained by the employee from a safe distance. Every attempt should be made to keep contamination or existing hazards from affecting other areas and personnel.
- 20.8.6 Employees who are conscious and have been exposed to a chemical or other hazardous substance should be taken immediately to a source of clean fresh air.
- 20.8.7 Administering personnel should make every attempt to keep an unconscious employee's air way open and rescue breathing should be started for the employee until normal respiration begins or trained medical personnel arrive.
- 20.8.8 Supervisors should always have assembly areas designated to take head count of all employees in the work crew, in the event of an emergency.

20.9 RECORDKEEPING

- 20.9.1 ZARNAS COMPANIES will maintain all records pertaining to this program, at our home office. Inclusive, will be records pertaining to the following:
 - 20.9.1.1 Employee training records
 - 20.9.1.2 Job Safety Analysis
 - 20.9.1.3 Safety meeting rosters
 - 20.9.1.4 (Material) Safety Data Sheets for chemicals and explosives in current use
 - 20.9.1.5 Medical and exposure records
 - 20.9.1.6 Injury reports
 - 20.9.1.7 Positive drug test reports

20.10 TRAINING

- 20.10.1 ZARNAS COMPANIES maintains the responsibility to ensure that their employees are adequately trained and are equipped with the knowledge and information necessary to conduct their jobs safely. It is likely that additional training will be needed since employees must know the specifics of the ZARNAS COMPANIES program such as where the SDSs are located, details of ZARNAS COMPANIES's labeling system and the hazards of new chemicals to which they will be exposed. An employer has a responsibility to evaluate an employee's level of knowledge with regard to the hazards at the facility, their familiarity with the requirements of the standard and the ZARNAS COMPANIES hazcom program.
- 20.10.2 Employees are trained at the time they are assigned to work with a hazardous chemical and should have information prior to exposure.
- 20.10.3 Training should not only include the hazards of the chemicals at the jobsite, but also how to use the information generated in the hazard communication program. This can be accomplished in many ways (audiovisuals, classroom instruction and interactive video) and should include an opportunity for employees to ask questions to ensure that they understand the information presented to them.

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- 20.10.3.1 It is not necessary that the employer retrain each new hire if that employee has received prior training by a past employer, an employee union or any other entity. General information, such as the basics of the HCS could be expected to remain with an employee from one position to another.
- 20.10.4 Training need not be conducted on each specific chemical found at the facility but may be conducted by categories of hazard (ex. carcinogens, sensitizers, acutely toxic agents) that are or may be encountered by an employee during the course of his job. The training must be comprehensible. If the employees receive job instructions in a language other than English, then the training and hazcom information will need to be conducted in that language.
- 20.10.5 All employees will be trained to read and follow SDSs. Employee must be familiar with all dangerous chemicals used on the job, proper PPE needed and proper labeling of containers. Employees will be trained to take a chemical list and SDSs sheets to all jobsites.
- 20.10.6 Due to the 2012 revision to the hazcom standard, employees will be provided with updated training that describes changes to the chemical classification process, SDS structure and content and new chemical labeling requirements.
- 20.10.7 Additional training is to be done whenever a new physical or health hazard is introduced into the work area, not a new chemical.



HAZARD IDENTIFICATION AND RISK ASSESSMENT

21.1 PURPOSE

21.1.1 The purpose of this policy is to help employees identify, analyze and apply control strategies to eliminate or reduce hazardous conditions and unsafe practices in the workplace.

21.2 METHODS

21.2.1 The following methods will be utilized to identify hazards on the jobsite:

21.2.1.1 Loss analysis of accident trends

21.2.1.2 Accident investigation

21.2.1.3 Employee observation

21.2.1.4 Employee suggestions

21.2.1.5 Job Safety Analysis

21.2.1.6 Regulatory requirements for our industry

21.2.1.7 Outside agencies such as the fire department and insurance carriers

21.2.1.8 Periodic safety inspections

21.2.2 These procedures are representative only and are not exhaustive of all the measures and methods that will be implemented. As new hazards are identified or improved work procedures developed, they will be incorporated into our *Health, Safety and Environmental Policies and Procedures*.

21.3 RISK CONTROLS AND METHODS TO IDENTIFY, ADDRESS AND MITIGATE HAZARDS

21.3.1 Risk assessed hazards are compiled with and addressed. They are mitigated through a dedicated assignment, appropriate documentation of completion and implemented control methods, including engineering or administrative controls and PPE required on the jobsite hazard assessment in the site specific HSE plan. No work will begin before the jobsite assessment is completed. Additionally, no risk assessed as High (Intolerable) will be performed.

21.3.2 If an existing or potential hazard is identified during a hazard assessment and if reasonably practicable, ZARNAS COMPANIES must eliminate or control a hazard through the use of engineering controls. If a hazard cannot be adequately controlled using engineering controls, the company must use administrative controls that control the hazard to a level as low as reasonably achievable. If the hazard cannot be adequately controlled using engineering and/or administrative controls, ZARNAS COMPANIES must ensure that the appropriate PPE is used. ZARNAS COMPANIES may use a combination of engineering controls, administrative controls and PPE, if the combination creates a greater level of worker safety.

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21.4 RISK ASSESSMENT

21.4.1 Hazards are identified, then classified and ranked based on severity. Hazards are prioritized and addressed based on the risk associated with the task. (See the risk analysis matrix outlining severity and probability). Revises or develops program(s) to meet employee needs.

RISK ASSESSMENT MATRIX

Consequences (C)	Likelihood (L)				
	Rare	Unlikely	Possible	Very Likely	Certain to Occur
Catastrophic	moderate	moderate	high	critical	critical
Major	low	moderate	moderate	high	critical
Moderate	low	moderate	moderate	moderate	high
Minor	very low	low	moderate	moderate	moderate
Insignificant	very low	very low	low	low	moderate

Consequences (C)	How Severely Could Someone Be Hurt?
Catastrophic	Death or permanent disability
Major	Serious injury, hospital treatment required
Moderate	Injury requiring medical treatment and some lost time
Minor	Minor injury, first aid only required
Insignificant	Injuries requiring no treatment or first aid
Likelihood (L)	How Likely Are The Consequences
Certain to Occur	Expected to occur in most circumstances
Very Likely	Will probably occur in most circumstances
Possible	Might occur occasionally
Unlikely	Could happen some time
Rare	May happen only in exceptional circumstances
Risk Level Rating	Action Required
Critical	IMMEDIATE ACTION NEEDED. Access to the hazard should be restricted until the risk can be lowered to an acceptable level. Short term action may be required to lower the risk level and then medium and long term plans to control the risk to as low as reasonably practicable using the hierarchy of control.
High	Action needed quickly (within 1-2 days). The task should not proceed unless the risk is assessed and control options selected based on the hierarchy of control.
Moderate	Action required this week to eliminate or minimize the risk using the hierarchy of control.
Low	Action required within a reasonable timeframe (2-4 weeks) to eliminate or minimize the risk using the hierarchy of control.
Very Low	Risk to be eliminated or lowered when possible using the hierarchy of control.



21.5 LOSS ANALYSIS

21.5.1 Periodic loss analyses will be conducted by the safety program administrator. These will help identify areas of concern and potential job hazards. The results of these analyses will be communicated to management, supervision and employees through safety meetings and other appropriate means.

21.6 ACCIDENT INVESTIGATIONS

21.6.1 All accidents and injuries will be investigated in accordance with the guidelines contained in this program. Accident investigations will focus on all causal factors and corrective action including the identification and correction of hazards that may have contributed to the accident.

21.7 EMPLOYEE OBSERVATION

21.7.1 Supervisors and foremen will be continually observing employees for unsafe actions and taking corrective action as necessary.

21.8 EMPLOYEE SUGGESTIONS

21.8.1 Employees and subcontractors are encouraged to be actively involved in the hazard identification process. Hazards are reviewed with all employees concerned. ZARNAS COMPANIES will provide tools to involve workers and their elected representatives in the development of the worker safety and health program goals, objectives and performance measures and in the identification and control of hazards in the workplace.

21.8.2 Employees are encouraged to report any hazard they observe to their supervisor. No employee is to ever be disciplined or discharged for reporting any workplace hazard or unsafe condition. However, employees who do NOT report potential hazards or unsafe conditions that they are aware of will be subject to disciplinary action.

21.9 JOB SAFETY ANALYSIS

21.9.1 A Job Safety Analysis (JSA) will be used for all jobs. The JSA is a process where the hazards associated with each step of a job are identified and control measures are put in place to lower the risk to personnel, property and the environment.

21.9.2 A JSA is developed and implemented for each identified operation and task and is required by ZARNAS COMPANIES's safety and environmental policies and practices.

21.9.3 This is a list of potential risks. A JSA will be used in the initial preparation or for validation of a procedure. Preparation of a JSA will also lead to a procedure being updated or changed to enhance safety and the protection of the environment.

21.9.4 JSA must be maintained at the jobsite and readily accessible to employees.

21.9.5 Assemble group that will perform the assessment.

21.9.6 Break the job down into the primary steps or operations that need to be completed.

21.9.7 Evaluate the specific steps and tasks for potential hazards.



- 21.9.8 Evaluate the surrounding area and work environment for hazards resulting from conditions.
- 21.9.9 Review the hazard checklist to prompt identification of other possible hazards.
- 21.9.10 Identify and list possible job hazards.
- 21.9.11 Develop recommendations for hazard management including risk reduction or elimination.
- 21.9.12 Review other JSA results for suggestions, ideas or direction.
- 21.9.13 Determine priorities for hazard reduction or elimination in order of preference.
- 21.9.14 Develop engineering controls
- 21.9.15 Develop administrative controls
- 21.9.16 Consider additional personal protective equipment
- 21.9.17 Record the information using the JSA form.
- 21.9.18 Verify JSA is adequate for job to be performed.
- 21.9.19 Include on the JSA the signatures/names of those that participated in the development of the JSA.
- 21.9.20 Review the JSA after completion of the job.
- 21.9.21 Revise the JSA to reflect changes that may not have been considered in the original JSA.
- 21.9.22 File completed JSA in location where individuals and the work group can access them.

21.10 REGULATORY REQUIREMENTS

- 21.10.1 All industries are subject to government regulations relating to safety. Many of these regulations are specific to our type of business. Copies of pertinent regulations can be obtained from the safety committee.

21.11 OUTSIDE AGENCIES

- 21.11.1 Several organizations may assist us in identifying hazards in our workplace. These include safety officers from other contractors, insurance carrier safety and health consultants, private industry consultants, the fire department and state OSHA consultants.

21.12 PERIODIC SAFETY INSPECTIONS

- 21.12.1 Periodic safety inspections ensure that physical and mechanical hazards are under control and identify situations that may become potentially hazardous. Inspections will include a review of the work habits of employees in all work areas. These inspections will be conducted by the supervisor, manager, program administrator or other designated individual.

- 21.12.2 Periodic safety inspections will be conducted:

- 21.12.2.1 When new substances, process, procedures or equipment are used



21.12.2.2 When new or previously unrecognized hazards are identified

21.12.2.3 Periodically by the supervisor

21.12.2.4 Periodically by the safety program administrator

21.12.3 These inspections will focus on both unsafe employee actions as well as unsafe conditions. The following is a partial list of items to be checked.

21.12.3.1 Proper use, condition, maintenance and grounding of electrically operated equipment

21.12.3.2 Proper use, condition, and maintenance of safeguards for all power-driven equipment

21.12.3.3 Compliance with the company safety manual

21.12.3.4 Housekeeping and personal protective equipment

21.12.3.5 Hazardous materials

21.12.3.6 Proper material storage

21.12.3.7 Provision of first aid equipment and emergency medical services

21.12.4 Any and all hazards identified will be corrected as soon as practical in accordance with the company hazard correction policy.

21.12.5 If imminent or life threatening hazards are identified, which cannot be immediately corrected, all employees must be removed from the area, except those with special training required to correct the hazard, who will be provided necessary safeguards.

21.12.6 The hazard identification process should be used for routine and non-routine activities as well as new processes, changes in operation, products or services as applicable.

21.13 DOCUMENTATION OF INSPECTIONS

21.13.1 Safety inspections will be documented to include the following:

21.13.1.1 Date on which the inspection was performed.

21.13.1.2 The name and title of person who performed the inspection.

21.13.1.3 Any hazardous conditions noted or discovered and the steps or procedures taken to correct them.

21.13.1.4 Signature of the person who performed the inspection.

21.13.1.5 One copy of the completed form should be sent to the office. All reports will be kept on file for a minimum of two years.

21.14 TRAINING

21.14.1 Employees are trained in the hazard identification processes.



- 21.14.2 Training includes the proper use and care of PPE.
- 21.14.3 Training will include instruction in the proper selection and use of personal protective equipment (PPE), regarding both hazards under evaluation and also as may be required for abatement or mitigation activities.
- 21.14.4 Training will be documented in writing with: date, time and place of training, names of personnel trained, the name of the person(s) presenting the training and a copy of the training material.
- 21.14.5 This training documentation will become part of the project safety file in accordance with ZARNAS COMPANIES recordkeeping procedures.



HAZARDOUS MATERIAL TRANSPORTATION

22.1 PURPOSE

22.1.1 This policy addresses acceptable guidelines and training, documentation requirements and security awareness for movement of hazardous materials.

22.2 DEFINITIONS

22.2.1 *Hazardous material* is a substance or material which is capable of posing an unreasonable risk to health, safety and property when transported in commerce, and which has been so designated by the US Department of Transportation (DOT).

22.2.2 *Shipping paper* is a bill of lading, manifest, shipping order or other shipping document containing information about the shipment.

22.3 RESPONSIBILITIES

22.3.1 Human resources department

22.3.1.1 Perform detailed background checks on all applicants.

22.3.1.2 Maintain employee information in a confidential and secure manner and in compliance with all relevant federal and state regulations and statues regarding confidentiality and individual privacy.

22.3.1.3 Verify that employees are US citizens or that non-citizens have documentation appropriate to their immigration status.

22.3.1.4 Ensure drivers have current CDL with appropriate endorsements and another form of identification and current medical certificate.

22.3.2 Safety director

22.3.2.1 Prevent unauthorized persons from gaining access to cargo tank vehicles, storage areas where bulk product is located and shipment information.

22.3.2.2 Conduct security awareness training for all employees including how to report suspicious incident or events.

22.3.2.3 Inspect facility grounds, maintenance areas and buildings to identify potential unauthorized entry to the property, at respective facilities.

22.3.2.4 Make sure keys are removed from equipment not in use and have secure key storage.

22.3.3 Employees

22.3.3.1 Be familiar of applicable regulations

22.3.3.2 Recognize and identify hazardous materials



22.3.3.3 Complete training applicable to job functions, emergency response and company's security procedures

22.3.3.4 Be aware of security risks associated with hazardous material transportation and ways to respond to possible security threats

22.4 HAZARDOUS MATERIAL CLASSIFICATION

22.4.1 The manufacturer must determine the classification of the hazardous materials before allowing a carrier to take possession of hazardous materials for transport. The material to be shipped must be characterized sufficiently so proper hazardous class and shipping requirements can be determined.

22.4.2 There are nine classes of hazardous materials:

22.4.2.1 Class 1 - Explosives

22.4.2.2 Class 2 - Gases

22.4.2.3 Class 3 - Flammable Liquids

22.4.2.4 Class 4 - Flammable Solids

22.4.2.5 Class 5 - Oxidizing Substances and Organic Peroxide

22.4.2.6 Class 6 - Toxic and Infectious Substances

22.4.2.7 Class 7 - Radioactive Material

22.4.2.8 Class 8 - Corrosives

22.4.2.9 Class 9 - Miscellaneous Dangerous Goods

22.4.3 Placards will not be faded or damaged. The UN number, class and the identifier symbol must be clear and visible. Any placards that are faded or damaged must be replaced immediately.

22.4.4 The material must be prepared for transportation in accordance with the applicable regulations for the mode of transportation.

22.4.5 ZARNAS COMPANIES will not offer for transport, transport or import a means of containment that contains hazardous materials unless each hazardous materials label and/or placard is displayed on it.

22.5 GENERAL

22.5.1 Workers should be aware of their surroundings.

22.5.2 Workers must follow laws of the highway and/or waterways and company policies while hauling or handling hazardous materials.

22.5.3 Ensure placards meet DOT requirements and shipping papers have correct information and date before transporting the load.

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- 22.5.4 Workers must always wear proper PPE when handling hazardous materials.
- 22.5.5 All hazardous materials or dangerous goods shipped on behalf of ZARNAS COMPANIES must be prepared, packaged, marked and labeled by an employee knowledgeable of the material or device and be currently trained in the shipping requirements for the mode of transportation employed (land or sea).
- 22.5.6 ZARNAS COMPANIES may conduct inspections and/or audits to verify all components are being implemented and are adequate. This may include training, packaging and proper completion of shipping papers.
- 22.5.7 Certain hazardous materials are exempt from shipping regulations when shipped in small quantities. These accepted quantity limits vary by material. The safety director will determine the regulatory status of the material, including any possible exceptions.
- 22.5.8 All hazardous materials or dangerous goods that are shipped by commercial transportation carriers must be shipped in accordance with all applicable hazardous materials regulations as published in 49 Code of Federal Regulations by the US DOT.

22.6 HANDLING, SECURING AND STORAGE

- 22.6.1 Hazmat containers must be kept away from heat sources or temperatures exceeding 130° F.
- 22.6.2 Workers must take care to not drop or roll containers containing hazardous materials.
- 22.6.3 ZARNAS COMPANIES will load and secure containers in such a way as to prevent, under normal conditions of transport, damage to the container or to the means of transport that could lead to an accidental release of the hazardous materials.
- 22.6.4 Access to bulk hazmat storage areas will be fenced and locked with key kept by safety director. Only hazmat trained employees are permitted to enter hazmat storage areas.
- 22.6.5 Trespassing will be reported immediately to ZARNAS COMPANIES safety director.
- 22.6.6 Tanks and cylinders will be secured and locked at all times except when loading and unloading.
- 22.6.7 Protective caps must be kept on and container valves must be kept closed when not in use.
- 22.6.8 Welding, cutting, drilling, grinding or similar operations must not be performed on or near hazardous material containers without following proper permit procedures.
- 22.6.9 When shipping hazardous materials, only new or retested (and certified) UN approved containers may be used. Reuse of used UN containers that have not been recertified may not be used. The certification should be kept on file by the shipper.
- 22.6.10 ZARNAS COMPANIES will not handle, offer for transport or transport hazardous materials in a container unless the container is designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of hazardous materials that could endanger public safety.



22.7 DOCUMENTATION – BILL OF LADING

- 22.7.1 Shipping papers are required for every bulk load of hazardous material. Shipping papers must contain the product name, material class, UN number, quantity of material, 24 hour emergency assistance phone numbers, company contacts and date.
- 22.7.2 The manufacturer must prepare and give a shipping document or, if the carrier agrees, an electronic copy of the shipping document before allowing a carrier to take possession of hazardous materials for transport. ZARNAS COMPANIES must be provided a signed copy of the shipping papers one working day in advance of the ship date. A safety data sheet SDS for the hazardous material being shipped must be provided.
- 22.7.3 The shipper must produce a copy of any shipping document for two years after the date the shipping document or an electronic copy of it was prepared or given to a carrier by the shipper, for hazardous materials imported into the US, for two years after the date the shipper ensured the carrier had a shipping document or was given an electronic copy of one. The shipper must produce a copy of any shipping document within 15 days after the day on which the shipper receives a written request from an inspector.

22.8 TRANSPORTATION AND DISPOSAL

- 22.8.1 ZARNAS COMPANIES complies with 40 CFR 263, 264 and 268, state and local regulations to assure all hazardous waste generated during the project is transported and disposed of properly.
- 22.8.2 Minimally, ZARNAS COMPANIES:
 - 22.8.2.1 Verifies that an EPA generator ID number is obtained by the Owner;
 - 22.8.2.2 Selects a licensed transporter in accordance with 40 CFR 263, 49 CFR 171-180, and state and local regulations. The name, qualifications and ID number of the transporter are provided to the owner for approval prior to use.
 - 22.8.2.3 Verifies a licensed disposal facility (TSD facility) is used to assure disposal in accordance with 40 CFR 264; 40 CFR 268; and state and local regulations. The name, qualifications and permit number of the TSD facility are provided to the Owner in advance for approval. A letter from the legally permitted hazardous waste disposal facility is obtained, stating that the facility has agreed to accept the waste; is authorized to accept the waste under the laws of the state of residence; has the required capability to treat and dispose of the materials; and will provide or assure the ultimate disposal method indicated on the uniform hazardous waste manifest. This letter is signed by a legally authorized representative of the disposal facility.
 - 22.8.2.4 Verifies that all containers are properly labeled in accordance with 40 CFR 264; 40 CFR 268; 49 CFR 172; and state and local regulations.
 - 22.8.2.5 Verifies manifest is properly completed and documentation maintained in accordance with 40 CFR 264; 40 CFR 268; 49 CFR 172.207; and state and local regulations.
- 22.8.3 Restricted waste

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- 22.8.3.1 Restricted waste (waste which contains heavy metals but with teachable amounts less than concentrations established in 40 CFR 261) generated during the project are transported and disposed of at an appropriate landfill (restricted or special) in accordance with state and local regulations.
- 22.8.3.2 The name, qualifications, EPA ID and/or permit numbers (if applicable) of the transporter and disposal facility are provided to the owner in advance for approval.
- 22.8.4 Non-hazardous waste
 - 22.8.4.1 Non-hazardous waste is disposed of at a non-hazardous (subtitle D) landfill in accordance with state and local regulations unless the presence of lead or other heavy metals causes it to be handled as described.
 - 22.8.4.2 The name and qualifications of the transporter and disposal facility are provided to the owner in advance for approval.
- 22.8.5 Waste resulting from the use of recycled steel grit
 - 22.8.5.1 When recycled steel grit abrasives are used, ZARNAS COMPANIES advises the facility owner that the waste disposal facility should be notified that the waste contains lead and that further stabilization is required prior to disposal.
 - 22.8.5.2 The requirements for hazardous waste disposal as outlined are followed unless specifically directed otherwise by the owner.
- 22.8.6 Scrap steel and recyclable materials
 - 22.8.6.1 ZARNAS COMPANIES may elect to scrap or recycle the metal waste generated by the project. Recyclable materials are exempt from hazardous waste regulations.
 - 22.8.6.2 Should ZARNAS COMPANIES elect to scrap or recycle the metal waste, ZARNAS COMPANIES will:
 - 22.8.6.2.1 Prepare a SDS to accompany the metal waste in order to advise the end user that lead or other toxic materials are present.
 - 22.8.6.2.2 Scrap steel will be sent to a steel mill or ferrous foundry where it will become part of their raw material and waste stream.
 - 22.8.6.2.3 Metal waste will be sent to recycling facilities, which typically recycle the lead for batteries. ZARNAS COMPANIES will obtain a transfer of ownership from any recyclers accepting the waste and will provide all documentation to the owner.
- 22.8.7 Special handling and disposal conditions for waste water
 - 22.8.7.1 ZARNAS COMPANIES provides containers for the collection and retention of all waste water, including but not limited to the water used for hygiene purposes (ex. grey water), laundering of clothing if done onsite and cleanup activities.

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22.8.7.2 ZARNAS COMPANIES filters visible paint chips and particulate from the water prior to placing it into the containers.

22.8.7.3 ZARNAS COMPANIES tests the water for total toxic metals and provide ample filtration (ex through a multi-stage filtration system ending in 5 microns or better if needed) until the water is not classified as hazardous, prior to disposal.

22.8.8 ZARNAS COMPANIES makes disposal arrangements with the local publicly owned treatment works (POTW), sanitation company or other appropriate permitted facility.

22.9 SECURITY

22.9.1 When transporting hazardous materials always be aware of surroundings, notice who is in proximity to vehicle/boat and at the worksite.

22.9.2 Never leave vehicle unattended when loaded with hazardous material.

22.9.3 If you see suspicious activity call the safety director immediately. Employees are to report any suspicious events to company and local law enforcement if immediate security measures are needed.

22.9.4 Be aware of the routes taken, stay away from congested or high traffic areas while carrying hazardous materials.

22.9.5 Report suspicious activity around fuel trucks or fuel storage areas.

22.9.6 Workers will perform inspections after each stop.

22.9.7 Security considerations should be considered in route selection and transport times.

22.9.8 Cell phones and radios are the method of communication for emergency messages to facilities. When needed, management or the safety director will communicate procedures for the captain to report unexpected occurrence.

22.9.9 Workers should not discuss details about their cargo and/or destinations with unauthorized personnel, such as over the radio or at docks.

22.9.10 Workers should never allow unauthorized personnel onto a company boat.

22.9.11 Captains should call appropriate authorities and notify them of anyone needing assistance.

22.9.12 Captains or drivers should not change course unless authorized by dispatch.

22.9.13 Employees will be made aware and follow all client site specific orientations, drills and procedures.

22.9.14 Threat conditions

22.9.14.1 A *low risk* of terrorist attacks general measures include ensuring personnel receive proper training on the *Homeland Security Advisory System*, regularly assess vulnerabilities of all facilities and regulated sectors.



- 22.9.14.2 In addition to protective measure for low condition, *general risk* measures include reviewing and updating emergency procedures to check communications with employees.
 - 22.9.14.3 In addition to protective measure taken in guarded condition, measures for a *significant risk* of terrorist attacks include increase surveillance of critical locations, implement contingency and emergency plans, as appropriate.
 - 22.9.14.4 In addition to protective measures for elevated condition, measures for a *high risk* of terrorist attacks include driver taking additional precautions when stopping en route and restricting access to essential personal.
 - 22.9.14.5 A *severe risk* of terrorist attacks implements all of the preceding measures as well as continuous monitoring or constraining travel or locations for stopping.
- 22.9.15 Security questions, information, reports of suspicious activity or incidents involving hazardous materials must be immediately reported to the safety director. The safety director contact will relay security related information immediately to the appropriate person or persons with the company as well the state local and federal law enforcement officials if necessary.
- 22.9.16 Provisions of the hazmat security plan will be evaluated quarterly and immediately upon the occurrence of a hazmat security incident. The safety director will continually monitor the hazmat transportation process, training, employee screening and incidents to update this plan to meet varying hazmat security needs. The security plan is subject to change as circumstances or federal law requires. An updated copy of the security plan will be provided to hazmat employees.
- 22.9.17 The company will provide news, updated and other pertinent information relating the security matters to hazmat employees on a regular basis.

22.10 INCIDENT PROCEDURES/REPORTING ACCIDENTAL RELEASE

- 22.10.1 All spills must be reported if any amount of a hazardous material is spilled in any waterway or if greater than 25 gallons of a hazardous material is spilled on the ground.
- 22.10.2 In the event of an accidental release of hazardous materials while under the possession of ZARNAS COMPANIES at the time of the accidental release, the employee immediately report the accidental release to appropriate authority if the accidental release consists of a quantity of hazardous materials or an emission of radiation that exceed quantities set out for each class of hazardous materials.
- 22.10.3 Any spill or leak of a hazardous material when being transported or any incident that involves an ZARNAS COMPANIES vessel transporting such materials must be reported immediately to the safety director and the local law enforcement office, as appropriate.
 - 22.10.3.1 Where an accidental release of hazardous materials in excess of a prescribed quantity or concentration occurs or is imminent from a container being used to handle or transport hazardous materials, any person who at the time has control of the container will report the occurrence or imminence of the release.



- 22.10.3.2 Every person required to make a report will, as soon as possible, take all reasonable emergency measures to reduce or eliminate any danger to public safety that results or may reasonably be expected to result from the release.
- 22.10.4 Secure the area to ensure no further incidents occur.
- 22.10.5 If there is a spill or leak, get the leak stopped if possible.
- 22.10.6 If necessary, call emergency services and report the incident.
- 22.10.7 If assistance in emergency procedures are required call *Chemtrec* for assistance. The 800 number is on the shipping papers.
- 22.10.8 Use booms or gravel berm to confine the hazardous material spill if possible.
- 22.10.9 Continue to keep the area secure and only allow personnel or people in the area that are authorized to be there.
- 22.10.10 When emergency services arrive, the scene can be turned over.
- 22.10.11 If the media arrives on the scene, do not talk to the media. When the supervisor or safety director arrives they will answer any questions from the media.

22.11 TRAINING

- 22.11.1 Each hazmat employee who handles, performs a regulated function related to or implements hazmat security must receive training that includes:
 - 22.11.1.1 General training to provide awareness and familiarization of the requirements of the hazardous materials transportation program and to enable the employee to recognize and identify hazardous materials consistent with the hazard communication standard
 - 22.11.1.2 Function-specific training applicable to the functions the employee performs
 - 22.11.1.3 Safety training pertaining to the following:
 - 22.11.1.3.1 Emergency response information
 - 22.11.1.3.2 Measures to protect the employee from the hazards associated with hazardous materials to which they may be exposed at the jobsite, including specific measures the employer has implemented to protect employees from exposure
 - 22.11.1.3.3 Methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials
 - 22.11.1.3.4 Any additional department specific training (ex. pre-trip inspections, control and equipment use, operation of emergency equipment).

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- 22.11.2 Initial training should be completed within 90 days after beginning employment or a change in job function. Refresher training must be completed at least once every three years.
- 22.11.3 ZARNAS COMPANIES will not direct or allow an employee to handle, offer for transport or transport hazardous materials unless the employee is adequately trained and holds a training certificate or performs those activities in the presence and under the direct supervision of a person who is adequately trained and holds a valid training certificate.
 - 22.11.3.1 To be approved to ship hazardous materials, employee must provide copies of initial training certification and copies of annual refreshers. Training must be mode-specific and training certificates must specify the transportation mode covered by the class.
- 22.11.4 All training is documented. Training records will be maintained by the safety director, including current and preceding training, as long as that employee is employed by the company and for 90 days thereafter.

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

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HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

23.1 PURPOSE

- 23.1.1 The purpose of this policy is to ensure workers are trained before they engage in hazardous waste operations or emergency response that could expose them to safety and health hazards.

23.2 GENERAL

- 23.2.1 The specific chain of command and responsibilities are critical to safe and orderly operations.
- 23.2.2 The safety director will be responsible for directing all hazardous waste operations.
- 23.2.3 The safety director or site supervisor have the responsibility and authority to develop and implement the site safety and health plan and verify compliance.
- 23.2.4 All other personnel needed for hazardous waste site operations and emergency response will be trained in their general functions and responsibilities and will comply fully with these regulations.
- 23.2.5 The organizational structure will be reviewed and updated as necessary to reflect the current status of waste site operations.
- 23.2.6 The site specific safety and health plan will be kept onsite and include the following elements:
 - 23.2.6.1 A hazard analysis for each site and operation found at the facility.
 - 23.2.6.2 Employee training assignments to assure compliance with this policy.
 - 23.2.6.3 PPE used by employees for each of the site tasks and operations being conducted.
 - 23.2.6.4 Medical surveillance requirements.
 - 23.2.6.5 Frequency and types of air monitoring, personnel monitoring and environmental sampling techniques and instrumentation to be used.
 - 23.2.6.6 Decontamination procedures
 - 23.2.6.7 Emergency Response Plan
 - 23.2.6.8 Confined space entry training
 - 23.2.6.9 Spill containment program

23.3 CONTINGENCY PLAN

- 23.3.1 ZARNAS COMPANIES complies with 40 CFR 265 Subpart C and D and state and local regulations for clean-up and reporting in the event of spills or releases of waste.
- 23.3.2 ZARNAS COMPANIES controls conditions at the storage site as described below in order to control inadvertent releases.

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

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- 23.3.3 Maintains and operates its storage facilities to minimize the possibility for fire, explosion or release of hazardous wastes into the environment.
- 23.3.4 Maintains the following required equipment:
 - 23.3.4.1 An internal communication system for providing emergency instructions to personnel
 - 23.3.4.2 Telephone or two-way radio capable of summoning emergency assistance
 - 23.3.4.3 Portable fire extinguishers at the storage areas where flammable or combustible wastes are present
 - 23.3.4.4 Water, when flammable, combustible or caustic wastes are present
- 23.3.5 ZARNAS COMPANIES tests and maintains equipment as necessary to assure proper operation.
- 23.3.6 Posts onsite, a list of all of the emergency equipment and its location.
- 23.3.7 Posts onsite, the name, address and phone number of ZARNAS COMPANIES designated emergency coordinator.
- 23.3.8 Posts the telephone numbers of local police, fire, and local emergency response personnel who are notified if the spill may be harmful to the health and welfare of the public. (Although this condition is deemed to be unlikely on industrial painting projects.)
- 23.3.9 ZARNAS COMPANIES utilizes the following for the control of spills of hazardous waste.
 - 23.3.9.1 Dry debris
 - 23.3.9.1.1 Workers are equipped with appropriate protective clothing
 - 23.3.9.1.2 Dry spills or releases are collected using HEPA vacuums
 - 23.3.9.2 Chemical stripper spills and releases
 - 23.3.9.2.1 Workers are equipped with protective clothing
 - 23.3.9.2.2 Shovels, mops, absorbent materials and HEPA-equipped vacuums or wet methods are used to capture and containerize the debris
 - 23.3.9.3 Water spills and releases
 - 23.3.9.3.1 Workers are equipped with protective clothing
 - 23.3.9.3.2 Shovels, mops, absorbent materials and HEPA-equipped wet vacuums are used to capture and containerize the debris

23.4 EMERGENCY RESPONSE

- 23.4.1 ZARNAS COMPANIES follows specific training requirements under OSHA's Hazardous Waste Operations and Emergency Response standard 29 CFR 1910.120.

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- 23.4.2 Prior to beginning hazardous waste operations, there will be an emergency response plan to handle possible onsite emergencies. Such plans must address: pre-emergency planning, coordination with outside parties, personnel roles, lines of authority, training and communications, emergency recognition and prevention, muster areas, security, evacuation routes/procedures, safe distances, places of refuge, decontamination and emergency medical treatment and emergency alerting.
- 23.4.3 The emergency response plan will include offsite emergency response information to better coordinate emergency action by the local services and to implement appropriate control action.
 - 23.4.3.1 An employer who retains contractor or subcontractor services for work in hazardous waste operations will inform those contractors or subcontractors of the site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified by the employer, including those identified in the employer's information program.
- 23.4.4 Emergency response plans are in writing and available for inspection by employees and OSHA.

23.5 PROCEDURE

- 23.5.1 Employee discovering the spill will survey and secure the area. Evaluate the seriousness of the situation in regard to protecting personnel and the public. Employee is not to approach the spill if they can smell hydrocarbons or potential chemical sources.
- 23.5.2 Notify a supervisor as soon as possible. Employees need to be aware of any device used to call in a spill notice that may not be intrinsically safe. Place calls from a safe distance.
- 23.5.3 The situation may require employee to stay at the scene and control access at a safe distance until initial response team arrives. The spill area is subject to regulatory controls with restricted access.
- 23.5.4 Initial spill control actions to halt the spread of a spill, direct its movements or minimize the area affected by the spill will not be initiated in the immediate spill area until all of the following occur:
 - 23.5.4.1 A complete site safety analysis
 - 23.5.4.2 Air monitoring will be used to identify and qualify airborne levels of hazardous substances. The monitoring will address initial entry, periodic monitoring, possible IDLH conditions and wherever exposure may be a possibility.
 - 23.5.4.3 Gas detector readings are 10% or less of the lower explosive limit (LEL). If the readings are above 10% of the LEL, spill control actions will be terminated in the immediate area and moved to an area where LEL conditions are less than 10%.
- 23.5.5 The *senior official* is the most senior official onsite who has the responsibility for controlling operations. It is the most senior person who first arrives on the incident scene. The senior emergency response official responding to an emergency becomes the individual in charge. As more senior officers arrive (ex. fire chief, state law enforcement, site coordinator, etc.) the position is passed up the line of authority which is previously established. All emergency responders and communications will be coordinated through the senior official.

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- 23.5.6 Personnel are given a briefing on the specific hazards and controls prior to entering the spill site.
- 23.5.7 Decontamination units, first aid kits and eye flushing supplies will be functional and onsite prior to attempting contact with spill materials.
- 23.5.8 To minimize employee exposure and reduce potential ignition sources, where possible, all initial approaches to the suspected spill site will be from the upwind direction.
- 23.5.9 Workers should not be permitted into the spill zone unless they have been trained, fit-tested and medically approved for respirator use. Do not approach the site or attempt gas testing without appropriate respiratory protection.

23.6 MONITORING

- 23.6.1 Air monitoring is performed where there may be employee exposure to harmful concentrations of hazardous substances to ensure proper selection of engineering controls, work practices and PPE so that employees are not exposed to levels which exceed PELs for hazardous substances.
- 23.6.2 Air monitoring is used to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of protection needed onsite.
- 23.6.3 Upon initial entry, representative air monitoring will be conducted to identify any IDLH condition, exposure over PELs, exposure over a radioactive material's dose limits or other dangerous condition such as the presence of flammable atmospheres, oxygen deficient environments.
- 23.6.4 Periodic monitoring will be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it will be considered whether the possibility that exposures have risen are as follows:
 - 23.6.4.1 When work begins on a different portion of the site
 - 23.6.4.2 When contaminants other than those previously identified are being handled
 - 23.6.4.3 When a different type of operation is initiated
 - 23.6.4.4 When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (ex. a spill or lagoon)
- 23.6.5 After the actual cleanup phase of any hazardous waste operation commences (ex. when soil, surface water or containers are moved or disturbed) ZARNAS COMPANIES will monitor those employees likely to have the highest exposures to those hazardous substances and health hazards likely to be present above PELs or published exposure levels by using personal sampling frequently enough to characterize employee exposures.
- 23.6.6 ZARNAS COMPANIES may utilize a representative sampling approach by documenting that the employees and chemicals chosen for monitoring are based on the criteria stated above. If the employees likely to have the highest exposure are over PELs then monitoring will continue to determine all employees likely to be above those limits.

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23.6.7 As certain tasks develop, a plan will be written concerning the specific conditions. Hazards and potential hazards will be identified as well as a guide for PPE assessments and use.

23.7 ENGINEERING CONTROLS, WORK PRACTICES AND PPE

23.7.1 Engineering controls, work practices and PPE or a combination of these are implemented to reduce exposure below established exposure levels for the hazardous substance involved.

23.7.2 Engineering controls and work practices will be instituted to reduce and maintain employee exposure to or below the PEL for regulated substances, except to the extent that such controls and practices are not feasible.

23.7.2.1 Feasible engineering controls may include the use of pressurized cabs or control booths on equipment and/or the use of remotely operated material handling equipment. Feasible work practices will be to remove all non-essential employees from potential exposure during opening of drums, wetting down dusty operations and locating employees upwind of possible hazards.

23.7.3 If engineering controls and work practices are not feasible or not required, PPE will be used in addition to any engineering controls and work practices. Hazardous waste emergency response personnel will use appropriate PPE for each job.

23.7.4 The following PPE will be available for use depending on the requirements of the situation and the training of the individual response personnel:

23.7.4.1 Positive pressure self-contained breathing apparatus

23.7.4.2 Totally encapsulating chemical protective suits capable of maintaining positive air pressure and capable of preventing inward gas leakage of more than 0.5%

23.7.4.3 Cooling garments (ex. cool vests) to be used when potential for heat stress due to impervious clothing use or when high ambient temperatures exist

23.7.4.4 Chemical resistant goggles, gloves and boots

23.7.4.5 Chemical resistant total body coverall Tyvek suits

23.7.4.6 Air purifying half mask or full face respirator with appropriate cartridges

23.8 MEDICAL SURVEILLANCE

23.8.1 All employees who are or may be exposed to hazardous substances or health hazards at or above the established PEL without regard to the use of respirators for 30 day or more a year or who are required to wear a respirator for 30 days or more a year, are covered under ZARNAS COMPANIES medical surveillance program at no cost to the employee.

23.8.2 Medical examinations and consultations will be made to each employee:

23.8.2.1 Prior to assignment

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- 23.8.2.2 At least once annually for each employee covered unless the attending physician believes a longer interval (not greater than bi-annually) is appropriate
 - 23.8.2.3 Reassignment to an area where the employee would not be covered if the employee has not had an examination within the previous six months
 - 23.8.2.4 As soon as possible upon notification that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or that the employee has been injured or exposed above the PEL in an emergency situation and at more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.
- 23.8.3 Medical surveillance is performed at least annually for all employees exposed to any particular hazardous substance at or above established exposure levels and/or those who wear approved respirators for 30 days or more onsite. Such surveillance will also be conducted if a worker is exposed by unexpected or emergency releases.
- 23.8.4 Employees, who are injured, become ill or develop symptoms due to possible overexposure to hazardous substances from an emergency response or hazardous waste operation and members of hazmat teams are also covered under the company's medical surveillance program.

23.9 DECONTAMINATION

- 23.9.1 A decontamination plan will be developed, communicated and implemented before employees or equipment may enter areas onsite where potential for exposure to hazardous substances exists.
- 23.9.2 Decontamination procedures will be implemented before employees or equipment leave an area of potential hazardous exposure to minimize exposure through contact with exposed equipment, other employees or used clothing. Showers and change rooms will be provided when needed.
- 23.9.3 Decontamination will be performed in geographical areas that will minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment.
- 23.9.4 Protective clothing and equipment will be decontaminated, cleaned, laundered, maintained or replaced as needed to maintain their effectiveness. Employees leaving a contaminated area will be appropriately decontaminated. Contaminated clothing and equipment will be appropriately disposed of or decontaminated.
- 23.9.5 Employees whose non-impermeable clothing becomes wetted with hazardous substances will immediately remove the clothing and proceed to shower. The clothing will be disposed of or decontaminated before it is removed from the work zone. Unauthorized employees will not remove protective clothing or equipment from change rooms.
- 23.9.6 Where the decontamination procedure indicates a need for regular showers and change rooms outside of a contaminated area, they will be provided and meet OSHA standards. Appropriate showers and change rooms will be provided when necessary. If temperatures prevent the effective use of water, the company will provide other effective means for cleaning.

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- 23.9.7 Decontamination procedures are monitored by the safety director to determine effectiveness. When procedures are ineffective, steps will be taken to correct any deficiencies.

23.10 INCIDENT FOLLOW UP

- 23.10.1 After completion of emergency response, if it is necessary to remove hazardous substances, health hazards and materials contaminated with them (such as contaminated soil or other elements of the natural environment) from the incident site, the jobsite management team conducting cleanup will ensure that all requirements of 29 CFR 1910.120 are met.
- 23.10.2 Emergency response workers who exhibit signs or symptoms resulting from exposure to hazardous substances during emergency operations will be provided with medical consultation.

23.11 TRAINING

- 23.11.1 There are specific training requirements for cleanup personnel, equipment operators, general laborers, supervisory employees and for various levels of emergency response personnel. Training requirements will vary by the operation. Employees will not begin work until they have received training specific to the area or task they will be assigned. Workers completing specific training for hazardous waste operations will be certified.
- 23.11.2 All employees exposed to hazardous substances, health or safety hazards will receive training to a level required for their job function and responsibility before they are permitted to engage in field activities. The training will cover the following elements:
 - 23.11.2.1 Awareness of the nature of potential hazards that may be encountered
 - 23.11.2.2 Knowledge and skills necessary to perform the work with minimal risk to worker health and safety
 - 23.11.2.3 Aware of the purpose and limitations of specialized safety equipment
 - 23.11.2.4 Handling emergencies and self-rescue
 - 23.11.2.5 Proper use of PPE
 - 23.11.2.6 Safe use of engineering controls and equipment onsite
 - 23.11.2.7 Work practices which can minimize risks from hazards
 - 23.11.2.8 Decontamination procedures
 - 23.11.2.9 Handling, storage and transportation of hazardous materials
 - 23.11.2.10 Safe sampling techniques and medical surveillance requirements
- 23.11.3 First responders at the *awareness level* (individuals likely to witness or discover a hazardous substance release and initiate the emergency response) must demonstrate competency in recognizing the presence of hazardous materials in an emergency, risks involved and their role.

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- 23.11.4 First responders at the *operations level* (individuals with the purpose of protecting property, persons or the nearby environment without actually trying to stop the release) must have eight hours of training plus awareness level competency or demonstrate competence in their role.
- 23.11.5 Workers who are occasionally onsite for a specific limited task and are unlikely to be exposed over permissible exposure limits will receive a minimum of 24 hours of instruction offsite and minimum of 1 day field experience under the direction of our trained experienced supervisor.
- 23.11.6 General site workers for ZARNAS COMPANIES will receive a minimum of 40 hours of offsite instruction and a minimum of 3 days of actual field experience under the direct supervision of our trained experienced supervisor.
- 23.11.7 If cleanup is done on customer property using ZARNAS COMPANIES employees, employees must complete OSHA training requirements and other appropriate safety and health training necessary for the tasks they are expected to perform. Workers who are designated as hazardous waste operations personnel that assist operations with non-emergency related small scale cleanups must have 40 hours of initial training before performing work cleanup activities.
- 23.11.8 Managers and supervisors directly responsible for cleanup operations must have an additional eight hours of specialized training in management of site work zones, hazardous waste site cleanup operations and communicating with the press and local community.
- 23.11.9 On-scene incident commanders (who assume control of the incident scene beyond the awareness level) must have 24 hours of training equal to the operations level and demonstrate competence in specific areas such as how to implement the response system, how to select PPE and have knowledge of applicable state and federal regulations. The on-scene incident commander will be certified to perform this role.
- 23.11.10 An eight hour annual refresher is required for HAZWOPER 24 and HAZWOPER 40 courses.
- 23.11.11 HAZWOPER instructors who teach initial training must have the academic credentials, experience and competent instructional skills necessary train on the subject matter.
- 23.11.12 Workers that have received and successfully completed the training and field experience will be certified by the instructor. A written certification is given to workers who pass the course.
 - 23.11.12.1 Any worker not certified or who does not meet the HAZWOPER training requirements will be prohibited from engaging in hazardous waste operations.
- 23.11.13 Training records are maintained in employee file to confirm that workers assigned to a task has adequate training for that task and that every worker's training is up-to-date.



HEARING CONSERVATION/NOISE EXPOSURE

24.1 PURPOSE

- 24.1.1 The purpose of this policy is to provide guidelines for employees exposed to occupational noise, to protect the hearing of those employees exposed to noise levels in excess of 85 dBA and to comply with OSHA occupational noise exposure standard.
- 24.1.2 For operations and duties defined as construction under this policy, the applicable 29 CFR 1926 regulation will supersede this policy and be applied.

24.2 INITIAL DETERMINATION

- 24.2.1 ZARNAS COMPANIES utilize services of a third party with expertise in noise monitoring to measure noise levels at various jobsites where employees are exposed to levels in excess of 85 dBA. In the absence of such measurement, the company will make hearing protection available to workers at no cost with the mandate they be worn in all instances where noise levels are a nuisance and/or workers are unable to verbally communicate when they are two feet or less apart.
- 24.2.2 ZARNAS COMPANIES will use information obtained through testing to establish operational procedures and issue hearing protection right for the noise levels.
- 24.2.3 ZARNAS COMPANIES will consider the input of supervisory personnel when making a determination to implement this program in areas where any of the below applies:
 - 24.2.3.1 Exposure measurements taken indicate noise levels at or above 85 decibels.
 - 24.2.3.2 Complains of working conditions which may be attributable to exposure to noise.
 - 24.2.3.3 A change in production, equipment, controls or personnel results in the exposure to noise levels which were not evident before.

24.3 MONITORING

- 24.3.1 When any information obtained in the initial determination conducted indicates employee exposure to noise levels at or above that required by the standard, equal/exceed the 8 hour time weighted average of 85 decibels, ZARNAS COMPANIES will have all exposed employees individually tested within sixty days of the finding.
- 24.3.2 ZARNAS COMPANIES will consider areas where intermittent noise fluctuations of 80 dBs to 130 dBs as warranting procedural changes to comply with the components of the program.
- 24.3.3 ZARNAS COMPANIES may obtain representative samples from specific jobsites, by having a single employee from the department wear a personal monitoring device. This will help determine the exposure for other employees who work in the area.
- 24.3.4 ZARNAS COMPANIES may utilize a dosimeter to be worn by a selected employee to measure noise level exposure in a selected test area.

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24.3.5 Upon submittal of the analysis of the test instrumentation, the company may then require the selected employee to wear a personal dosimeter to determine if employee exposure to noise levels exceed 85 decibels over an 8 hour period.

24.3.6 ZARNAS COMPANIES will use an outside audiometric specialist to monitor noise levels in a designated area, when necessary, to determine the type of hearing protection required to offer maximum protection for employees who work in the area.

24.4 EMPLOYEE NOTIFICATION

24.4.1 An employee, who is being individually monitored, will be provided the opportunity to observe any measurements collected during the test.

24.4.2 Supervisors will explain monitoring procedures to employees and how test results are interpreted.

24.4.3 ZARNAS COMPANIES will conspicuously post notices throughout the work place, notifying employees of the need to wear hearing protection in a specific area.

24.4.4 ZARNAS COMPANIES will make copies of the noise exposure procedures available to affected employees, the assistant secretary and the director and will also post a copy in the workplace.

24.5 MEDICAL SURVEILLANCE

24.5.1 ZARNAS COMPANIES will rely on expert assessment of the compared audiograms to determine if an employee has experienced a threshold shift of 10 decibels or greater. If such is the case, the company will refer the employee for medical evaluation at a company approved medical facility, within 30 days of the finding.

24.5.2 ZARNAS COMPANIES will rely on the treating physician, to provide medical evaluation and surveillance to its employees in accordance with the requirements of this program.

24.5.3 ZARNAS COMPANIES will provide information concerning the respective employee's job functions in an effort to assist medical professional with this evaluation.

24.5.4 ZARNAS COMPANIES will rely upon the advice of an authorized physician or the employee's treating physician, regarding hearing protection for employees whose ears are chronically draining or those who have active ear pathology. Such individuals may be removed from the exposed position at the recommendation of the physician.

24.6 NOISE CONTROL

24.6.1 The most desirable method of noise control is to apply engineering principles designed to reduce sound levels either at the source or within the hearing zone of the employee. This application can usually reduce noise to a desired level, however operational necessities can make these controls impractical. It is ZARNAS COMPANIES's policy to utilize engineering controls whenever feasible and practical to reduce employee noise exposures.

24.6.2 Whenever engineering controls are not feasible or practical, the use of administrative controls should be explored. Administrative controls may be used in conjunction with engineering controls.

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- Administrative controls include any administrative decision that results in lower noise exposures; including complying with purchase agreements that specify maximum noise levels for machinery.
- 24.6.3 Administrative controls may include rotating jobs so that exposure times are reduced. This includes such measures as transferring employees from a location with high noise levels to one with a lower level in order to reduce the daily exposure below the *action level*. When administrative controls are not feasible with regard to job rotation, other alternatives, including hearing protection will be utilized to reduce the daily noise exposure.
 - 24.6.4 In areas of continuous high noise levels or where noise levels result from more than one source simultaneously, ZARNAS COMPANIES may adjust schedules to reduce the degree of prolonged exposure.
 - 24.6.5 A continuing effective hearing conservation program will be administered when employees are exposed to sound levels greater than 85 dB on an 8 hour time weighted average basis.
 - 24.6.6 ZARNAS COMPANIES will require hearing protection for any employee who:
 - 24.6.6.1 Has not yet had a baseline audiogram established
 - 24.6.6.2 Has experienced a standard threshold shift
 - 24.6.6.3 Is exposed to an 8 hour TWA of 85 decibels or more

24.7 PERSONAL PROTECTIVE EQUIPMENT

- 24.7.1 Employees must wear hearing protection when necessary.
- 24.7.2 ZARNAS COMPANIES will provide hearing protection for all employees work in areas and are exposed to an 8 hour TWA of 85 decibels. ZARNAS COMPANIES will allow employees to select hearing protection from a variety of those provided at no cost to them which:
 - 24.7.2.1 Provides to them a comfortable fit
 - 24.7.2.2 Provides proper attenuation (shielding)
 - 24.7.2.3 Reduces the level of the noise being heard
- 24.7.3 For the protection to be effective, the right hearing protector for the job must be used. This is determined by several factors such as noise hazard, noise reduction rating, exposure, work area and fit. ZARNAS COMPANIES will evaluate hearing protection for the specific noise environments in which the protector will be used.
- 24.7.4 Earplugs reduce noise when properly fitted in the outer part of the ear canal. Properly fitted earplugs help to protect against high intensity noise.
- 24.7.5 To compare products, check the noise reduction rating (NRR) on the package. The higher the rating, the better the protection.
- 24.7.6 For comfort and protection, plugs must be the right size for a snug fit and properly positioned.

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- 24.7.6.1 Formable fits all ears and may be disposable or semi-disposable. These earplugs should be made of waxed cotton or acoustical fibers.
- 24.7.6.2 Pre-molded of soft silicone, rubber or plastic are re-usable. They are available in universal and multi-size type for a better fit.
- 24.7.6.3 Custom molded earplugs are made of silicone rubber or plastic molding compound and are placed in the ear and allowed to set.
- 24.7.7 Canal caps close off ear canal at the opening. Caps are made of a soft, rubber-like substance with a light band under tension to keep them in position. They may reduce noise levels up to five dB.
- 24.7.8 Earmuffs fit over the whole ear to seal out the noise. Earmuffs protect against moderate and high intensity noise. They can help reduce noise levels by 15 - 25 decibels. The headband pressure should not be too tight or too slack and the cups should not pinch the ears or lobes at any point.
- 24.7.9 Earmuffs and earplugs can be used together for areas of extreme noise exposures.
- 24.7.10 Follow manufacturer instructions. Have repairs or replacements made promptly when necessary.
- 24.7.11 Affected employees must be trained in the selection, use, care and fitting of hearing protection.

24.8 AUDIOMETRIC TESTING

- 24.8.1 An audiometric testing program must be established and maintained by making audiometric testing available to all employees whose exposures equal or exceed an 8 hour TWA of 85 decibels.
- 24.8.2 Within 6 months of an employee's first exposure at or above the action level, ZARNAS COMPANIES will have new employees audiometric tested prior to assignment to a job function where the employee will be exposed to excessive noise levels. Such testing will represent a valid *baseline* audiogram, for the purpose of comparing the present hearing range capability with future audiograms.
- 24.8.3 ZARNAS COMPANIES will have audiometric testing conducted on its employees at least annually, whenever they work in environments where noise levels remain continuous or intermittent, above 85 dBA, daily TWA. Testing will be preceded by at least 14 hours of workplace activity without exposure to detectable noise levels. Employee's participating in audiometric testing, whether baseline, monitoring or annual, will be at no cost to the employee.
- 24.8.4 Whenever ZARNAS COMPANIES has additional testing conducted after a baseline audiogram has been performed, it will use such test results to measure the extent of hearing loss to the employee by comparing the current result to the baseline. The company hopes to conclude:
 - 24.8.4.1 That the audiogram was valid with initial testing meet all requirements for equipment, test conductor location and recordkeeping/document preparation.
 - 24.8.4.2 If a significant threshold shift has occurred in the employee's hearing range:
 - 24.8.4.2.1 The employee will be informed in writing within 21 days of test.

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24.8.4.2.2 The employee will be refitted while being allowed to select, at no cost, from a variety of hearing protectors, as recommended by the attending physician, which will provide a better degree of attenuation.

24.8.4.2.3 Employee may be referred for medical treatment under the medical surveillance program at no cost to the employee.

24.8.5 Audiometric testing, when performed, will be conducted by a licensed or certified audiologist, physician or other technician who is certified by the Council of Accreditation in Occupational Hearing Conservation or another individual who has demonstrated competency in administering audiometric examinations, obtaining valid audiograms and properly using, maintaining and checking calibration and proper functioning of the audiometers being used.

24.8.6 Employees who infrequently visit areas posted *Hearing Protection Required*, will not be subject to the testing requirements of this program. Workers are required to wear required hearing protection whenever they will enter such an area.

24.8.7 ZARNAS COMPANIES will provide for retesting of any employee who complains of hearing loss at any time within ten days of notification. Employees should report any suspected hearing loss to the respective supervisor immediately.

24.9 RECORDKEEPING

24.9.1 ZARNAS COMPANIES will retain accurate employee exposure and medical records, including the results of the most recent noise exposure assessment, in a confidential file, located at our corporate office, for the duration of employment plus thirty years.

24.9.2 ZARNAS COMPANIES will also retain these additional records, for five years, unless there is medical data sufficient to justify retaining them:

24.9.2.1 Name and job classification of the employee

24.9.2.2 Date of the examination

24.9.2.3 The examiner's name

24.9.2.4 The date of the last acoustic or exhaustive calibration of the audiometer

24.9.2.5 Accurate records of the measurements of the background sound pressure levels in audiometric test rooms

24.10 TRAINING

24.10.1 ZARNAS COMPANIES will rely on company approved training facilities, to conduct employee training. The company will supplement this training by providing adequate hearing protection.

24.10.2 ZARNAS COMPANIES will provide training to affected employees annually and will be updated consistent to changes in PPE and work processes. At a minimum:

24.10.2.1 Identifying noise

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- 24.10.2.2 Effects of noise on hearing
 - 24.10.2.3 Anatomy of the ear
 - 24.10.2.4 Defining industrial noise (machine and process identification)
 - 24.10.2.5 Controlling noise exposure
 - 24.10.2.6 How testing is performed and how the results are interpreted
 - 24.10.2.7 Work practice and engineering controls
 - 24.10.2.8 Personal protective equipment
 - 24.10.2.9 Responsibilities under the program
 - 24.10.2.10 Proper use and fit of hearing protectors
- 24.10.3 Under the policy guidelines, supervisory personnel will receive this additional training:
- 24.10.3.1 Identifying noise hazard areas
 - 24.10.3.2 Evaluation and analysis
 - 24.10.3.3 Monitoring employee use of hearing protectors and other protective equipment
 - 24.10.3.4 How to initiate engineering and work practice controls which will control noise level exposure in an area and limit employee long term exposure
 - 24.10.3.5 How to maintain proper documentation
 - 24.10.3.6 Instructing employees in the proper selection, fitting and use of ear protection
 - 24.10.3.7 How to evaluate the results of personal monitoring devices
- 24.10.4 Whenever ZARNAS COMPANIES employees work on temporary jobsites where the exposure to hazard(s) is non-routine in nature, training will be conducted to address changes associated with a change in personal protective equipment or work procedure.

HEAT AND COLD STRESS PREVENTION

Revision Date: 10/2017



HEAT AND COLD STRESS PREVENTION

25.1 PURPOSE

25.1.1 The purpose of this policy is to protect workers from potential adverse health and safety risks associated with working in extreme cold and heat situations by providing reasonable solutions for worksites with extreme weather environments. It applies to all ZARNAS COMPANIES workers who work in high/low temperature conditions, wind and/or moisture for significant time periods. This policy is primarily intended for outdoor workers.

25.2 RESPONSE TO HEAT AND COLD

25.2.1 By sweating, shivering and changing the rate of blood flow, the body can adapt to a fairly wide range of temperatures. However, there are limits to what the body can adapt to and its ability to maintain its core temperature can fail.

25.2.2 To stay warm in cold environments, the body:

25.2.2.1 Shivers - The moving muscles help increase heat production.

25.2.2.2 Reduces blood flow to the skin and extremities (hands and feet) to reduce heat loss from the surface.

25.2.3 To stay cool in hot environments, the body:

25.2.3.1 Sweats - Evaporating sweat cools the body.

25.2.3.2 Increases blood flow to the skin to speed up the loss of heat from the skin (radiate away the excess heat) if the outside air is cooler.

25.3 ACCLIMATIZATION

25.3.1 How cold or hot you feel depends on six main factors - air temperature, radiant heat, relative humidity, moving air, physical exertion and clothing.

25.3.2 Workers can adapt to different temperatures through a process called acclimatization.

25.3.3 Workers must be monitored to ensure they are adapting to working at different temperatures. When working in new conditions, people need at least four to seven working days to acclimatize, but the process may take up to three weeks. A scheduled exposure is recommended. For example, doing physical work for less than a full working day on the first day and slowly increasing the time spent working over the next week.

25.4 COLD

25.4.1 Cold is a physical hazard in many workplaces. When the body is unable to warm itself, cold related illnesses and injuries can occur. Exposure has mental and physical effects. Watch out for signs of unusual behaviors in yourself and coworkers. These are indicators the person is not coping well with the temperature and their condition should be investigated.

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25.4.2 Indicators include:

25.4.2.1 Loss of alertness, slurred speech, fatigue, lethargy or apathy.

25.4.2.2 General discomfort and a loss of sensitivity and dexterity in fingers, hands and toes.

25.4.2.3 At low temperatures, deep muscles can be affected, reducing muscle strength and flexibility.

25.5 COLD EXPOSURE HAZARDS

25.5.1 Extreme cold and environmental factors related to working in northern locations are potentially hazardous to health and safety. It is necessary to identify the hazards, assess the potential risk to workers and develop and implement controls to mitigate potential hazards with cold conditions.

25.5.2 Potential safety hazards

25.5.2.1 Winter clothing, head protection, gloves and boots used while working in the cold can restrict movement and hoods or hats may obstruct side vision.

25.5.2.2 Cold affects dexterity, affecting skill and ease of using the hands.

25.5.2.3 Extremely cold conditions adversely affect mental skills and coordination.

25.5.2.4 The mobility of fingers slows down, which affects task performance.

25.5.2.5 Cold affects grip force and the skin's ability to sense temperature and pain.

25.5.2.6 Cold exposure reduces muscle power and time to exhaustion.

25.5.2.7 Cold exposure aggravates vibration, inducing white finger disease, which makes manual work painful.

25.5.2.8 Special care is needed while using ladders or working on elevated platforms in snow and icy conditions.

25.5.2.9 Power tools and equipment need special care to be operational in a cold environment.

25.5.2.10 Heavy snow fall and blizzards can produce very cold conditions and restrict visibility.

25.5.2.11 Workers in remote areas need to take extra precautions and orient themselves to cold weather operations and emergency survival.

25.5.2.12 Working on ice and frozen bodies of water require ice testing and knowledge of the ice bearing capacity.

25.5.3 Potential health hazards

25.5.3.1 Frostnip and frostbite

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- 25.5.3.1.1 The mildest form of a freezing cold injury, frostnip, occurs when ear lobes, noses, cheeks, fingers or toes are exposed to the cold and the top layers of the skin freeze. The skin of the affected area turns white and may feel numb. The skin feels hard but the deeper tissue still feels normal. The affected skin may peel.
- 25.5.3.1.2 Frostbite happens when fluids around the body's tissues freeze at temperatures below 32°F. The most vulnerable parts of the body are the nose, cheeks, fingers, ears and toes. Exposure to extreme cold or contact with extremely cold objects, causes frostbite. It may also occur at normal temperatures from contact with cooled or compressed gases.
- 25.5.3.1.3 Blood vessels may be severely and permanently damaged and blood circulation may stop in the affected tissue. In mild cases, symptoms include inflammation (redness and swelling) of the skin accompanied by slight pain. In severe cases, tissue damage without pain can happen. Frostbitten skin is highly susceptible to infection and gangrene.
- 25.5.3.1.4 Symptoms of frostbite include coldness and tingling in the affected area followed by numbness, changes in skin color to white or greyish-yellow, initial pain which subsides as the conditions gets worse and blisters.
- 25.5.3.2 Chilblains
 - 25.5.3.2.1 Chilblains, a mild cold injury, is caused by prolonged and repeated exposure for several hours to air temperatures ranging from 32°F - 60°F. The affected area shows signs of redness, swelling, tingling and pain.
- 25.5.3.3 Immersion foot
 - 25.5.3.3.1 Also known as trench foot, immersion foot, results from prolonged exposure in a damp or wet environment where temperatures range from 32°F to 50°F. Depending on the temperature, symptoms may begin within several hours to many days, averaging three days. The primary injury is to nerve and muscle tissue.
 - 25.5.3.3.2 Symptoms include tingling and numbness, itching, pain, swelling, leg cramps, blisters or bleeding under the skin. Skin may be red initially and turn blue or purple as it progresses. Severe cases can lead to gangrene.
- 25.5.3.4 Snow blindness
 - 25.5.3.4.1 When working outdoors in the winter, you may face exposure to snow blindness. This is normally a temporary loss of vision caused by exposure to bright sunlight reflected from snow or ice. It can occur on cloudy or overcast days or during snow storms. Snow blindness is painful, because the ultraviolet rays of the sun burn the cornea.



25.5.3.4.2 Symptoms include a sensation of grit in the eyes, pain in and over the eyes that increases with eyeball movement, inflammation, red, teary eyes or headache that intensifies with continued exposure to light.

25.5.3.4.3 In most cases, snow blindness lasts no more than one day, and goes away after a person relieves the fatigue of the retina by resting indoors and away from bright light. In rare cases, prolonged exposure to the reflected light can lead to permanent vision loss.

25.5.3.5 Hypothermia

25.5.3.5.1 Hypothermia occurs when the body is unable to compensate for its heat loss and the body's core temperature starts to fall. You first feel cold followed by pain in exposed parts of the body. As the body's core temperature continues to drop, the feeling of cold and pain starts to diminish due to increasing numbness. In the absence of pain, serious injury can occur without the person noticing it.

25.5.3.5.2 As the body continues to cool, you experience muscular weakness, an inability to think clearly and drowsiness. This condition usually occurs when the body's internal or core temperature falls below 91°F. Additional symptoms include shivering coming to a stop, diminished consciousness and dilated pupils. At such a low body temperature, the brain is affected and a person cannot think or move well. This makes hypothermia especially dangerous as the person may not know what is happening or be able to do anything about it. When the body's core temperature reaches 81°F coma sets in.

25.6 COLD EXPOSURE HAZARD CONTROL

25.6.1 A cold environment challenges the worker in three ways: air temperature, air movement (wind speed) and humidity (moisture).

25.6.2 In order to work safely proper insulation, such as layered protective clothing, physical activity and controlled exposure to cold through a work warm-up schedule need to be implemented.

25.6.3 The best way to control a hazard is to eliminate it. This step is impracticable when the hazard is an outdoor environmental condition.

25.6.4 Equipment is prone to break down at extreme temperatures. Safety harnesses are tested to comply with standards ranging down to -31°F.

25.6.5 Provide a heated shelter for workers to work in where possible, but at minimum as a shelter for work warm-up breaks.

25.6.6 Use controls such as enclosures and heating systems where practical and possible.

25.6.7 Protect the body from frostbite with an onsite source of heat. Consider air heaters, radiant heaters or contact warm plates. Heaters that emit carbon monoxide should be used with caution.

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- 25.6.8 Shield work areas from drafts or winds as much as possible.
- 25.6.9 Use thermal insulating material on equipment, such as metal handles. Use insulating barrier/pads where workers need to sit, kneel or stand on concrete or steel.
- 25.6.10 Use a work warm-up schedule. Provide a warm shelter or vehicle for workers to warm up.
- 25.6.11 Allow a period of adjustment to the cold before assigning a full work schedule.
- 25.6.12 Minimize time outdoors and do as many tasks indoors as possible.
- 25.6.13 Minimize activities that reduce blood circulation, such as sitting or standing for long periods.
- 25.6.14 Ensure backup for workers in isolated cold environments, indoor or outdoor.
- 25.6.15 Avoid use of alcohol or drugs that may impair judgment while working in a cold environment. Alcohol increases heat loss by dilating the blood vessels and it may prevent a person from shivering, which serves as warming mechanism.
- 25.6.16 Prevent dehydration and keep energy levels up by consuming warm, caffeine-free, non-alcoholic drinks and soup.
- 25.6.17 Select protective clothing to suit the cold, the job and the level of physical activity. Occupations have different requirements for workers. Outer layer must be fire retardant materials.
- 25.6.18 Wear several layers of clothing rather than one thick layer. Multiple layers of clothing help create air pockets that retain body heat. Layering also makes adapting to changes in weather and level of physical exertion easier, because you can remove layers and put them back as conditions and work effort change.
- 25.6.19 Use safety footwear that protects against the cold and dampness. Felt-lined, rubber bottomed, leather topped boots with removable felt insoles are best suited for heavy work in cold since leather is porous and allows for perspiration to evaporate. However, if work involves standing in water or slush, waterproof boots need to be worn. Waterproof boots protect the feet from getting wet, but since they prevent perspiration from escaping socks may become damp quicker and increase the risk for frostbite.
- 25.6.20 Footwear should be insulated and fit comfortably when socks are layered. Tight fitting footwear restricts blood flow. Arctic rated winter boot are advisable. Boots made of ballistic nylon offer the best protection against cuts. Rubber soles are suited to wet weather and snow, and hobnail boots, grip soles or cork soles to rough terrain.
- 25.6.21 Protect head, face and hands to prevent heat loss and frostbite. Use the appropriate hardhat liner with face shield or facemask or balaclava. Wear mittens instead of gloves when fine manual work is not required or gloves with nylon over-mitts that can be taken off. Arctic gauntlet mitts are advisable. Leather gloves with ballistic nylon reinforcement on the back offer good grip and absorb some vibration. Be careful not to get gloves caught in the moving parts of machinery.

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- 25.6.22 Fine work performed with bare hands for more than 10-20 minutes in an environment below 60°F requires special measures to keep workers' hands warm. These measures may include warm air jets, radiant heaters (fuel burning or electric) or contact warm plates.
- 25.6.23 Metal handles of tools and control bars should be covered by thermal insulating material for temperatures below 30°F.
- 25.6.24 Workers should wear gloves where fine manual dexterity is not required and the air temperature falls below 60°F for sedentary, 39°F for light and 19°F for moderate work.
- 25.6.25 To prevent contact frostbite, workers should wear insulated gloves when surfaces within reach (especially metallic surfaces) are colder than 19°F. Warn workers to avoid skin contact with these surfaces.
- 25.6.26 Tools and machine controls used in cold conditions should be designed for operation with gloves.
- 25.6.27 Remove the outer layer of clothing when entering a shelter from the cold and loosen other clothing to let sweat evaporate. A change of clothing may be necessary as sweat dampened clothes lose their insulation value.
- 25.6.28 Remove layers as you begin to sweat to avoid losing insulation value, but do not forget to put them back on when you stop working. Do not wait until you get cold.
- 25.6.29 Use caution when handling gasoline. With a freezing point of -69°F and a high evaporation rate, contact with the skin can be very dangerous.
- 25.6.30 Be aware of symptoms of cold exposure at the jobsite. Workers showing signs of shivering, frostbite, fatigue, drowsiness, irritability or euphoria should immediately return to shelter.
- 25.6.31 An injury such as a sprained ankle while working alone could lead to severe cold exposure. Avoidance of cold injury is usually a matter of recognizing the potential for cold stress and dressing appropriately for protection. There is a great deal of individual variation in tolerance to cold. Good nutrition, appropriate warm-up procedures and preventive measures and early recognition of cold stress will minimize problems.
- 25.6.32 Workers should not work alone in the cold for long periods of time.

25.7 FIRST AID FOR COLD EXPOSURE

- 25.7.1 Prevent frostnip and frostbite by covering exposed skin surfaces. Cover the cheeks, chin, nose, ear lobes and forehead. A thin layer of a product such as petroleum jelly may help.
- 25.7.2 Treat frostnip or frostbite by gentle rewarming (ex. holding the affected tissue next to the unaffected skin of another person). For cold-induced injuries, never rub the affected areas as ice crystals in the tissue could cause damage if the skin is rubbed. Do not use hot objects such as hot water bottles or electric blankets to rewarm the area or person.
- 25.7.3 Frostbite or immersion
 - 25.7.3.1 Warm frostbitten area gradually with body heat. Do not rub.

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25.7.3.2 Do not thaw hands or feet unless medical aid is distant and there is no chance of refreezing. If skin freezes again, severe tissue damage can result. Thawing is better done at a hospital. Loosely cover the affected area with a sterile gauze dressing.

25.7.3.3 Quickly transport the victim to a health care facility.

25.7.4 Hypothermia

25.7.4.1 Carefully move the worker to shelter. Sudden movement or rough handling can upset heart rhythm.

25.7.4.2 Remove wet clothing and wrap in warm covers. Cover the worker's head. If medical help is not available immediately, body-to-body contact can help rewarm the victim slowly. Do not use hot water bottles or electric blankets.

25.7.4.3 Give warm, sweet drinks that are caffeine-free and non-alcoholic unless the victim is rapidly losing consciousness, is unconscious, or is convulsing.

25.7.4.4 Call for help and quickly transport the victim to an emergency medical facility.

25.7.4.5 Monitor breathing. Perform CPR if necessary. Continue to provide CPR until medical aid is available. The body slows when it is very cold and hypothermia victims that appeared dead have been successfully resuscitated.

25.8 HEAT

25.8.1 Working in hot conditions puts stress on the body's cooling system. Heat combined with exertion, loss of fluids and fatigue may cause heat stress. Heat strain is the overall response of the body resulting from heat stress. It can cause a wide variety of health disorders. Heat stroke is a serious health risk. Heat-related illnesses depend on many workplace factors, such as air temperature, relative humidity, workload, radiant heat sources and physical condition.

25.8.2 Heat exposure can have mental and physical effects. Watch for signs of unusual reactions in yourself and coworkers. These are indicators the person is not coping well with the temperature and their condition should be investigated.

25.8.3 Indicators include:

25.8.3.1 Increased irritation, mood changes, depression, aggression and anger

25.8.3.2 Increased heart rate and sweating, muscle cramps, changes in breathing patterns, dizziness, faintness or heat rash

25.9 HEAT EXPOSURE HAZARDS

25.9.1 Heat stress can impair a workers' ability to work safely. Workers moving from cold to hot environments with eyeglasses may have briefly obscured vision, which is a safety hazard. Slippery palms can lead to accidents. Heat may also affect mental alertness and ability to work, increasing the risk of accidents. Accidental contact with hot surfaces can lead to injury.

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25.9.2 Potential health hazards

25.9.2.1 Heat stress

25.9.2.1.1 Early symptoms of heat stress include fatigue, irritability, lack of coordination and altered judgment. The combination of heat stress and dehydration means people performing skilled tasks may become tired faster than normal and have trouble concentrating. This results in a higher risk for errors.

25.9.2.2 Heat edema

25.9.2.2.1 Swollen hands or feet and ankles when people sit or stand for a long time in a hot environment. Heat causes the blood vessels to expand (dilate) and body fluid moves into the hands or legs.

25.9.2.3 Heat rash

25.9.2.4 Heat cramps

25.9.2.4.1 Painful muscle spasms that occur during strenuous activity in hot environments. Associated with cramping in the abdomen, arms and calves, the muscle pains may occur alone or in combination with another heat stress disorder. Inadequate consumption of fluids or electrolytes often contributes to heat cramps.

25.9.2.5 Heat exhaustion

25.9.2.5.1 A break down in the body's cooling system resulting from fluid loss and inadequate water intake. Symptoms include cool moist skin, a body temperature above 100.4°F, weak pulse, heavy sweating, panting, weakness, dizziness, nausea, vomiting and blurred vision.

25.9.2.6 Heat stroke and hyperthermia

25.9.2.6.1 Hyperthermia is an elevated body temperature. Extreme temperature elevation can become a medical emergency requiring immediate treatment to prevent disability and death. Heat stroke can lead to hyperthermia. Heat stroke is caused by a combination of exposure to excessive heat and humidity or excessive exertion. The body's heat-regulating mechanisms become overwhelmed and the body temperature climbs uncontrollably. These are the most serious types of illness resulting from exposure to heat. In severe cases, body temperature can exceed 104°F and result in complete or partial loss of consciousness.

25.9.2.6.2 A heat stroke victim is usually unable to recognize the heat stroke signs and symptoms. Survival depends on a coworker's ability to recognize the symptoms and seek immediate help.



25.10 HEAT EXPOSURE HAZARD CONTROL

- 25.10.1 There are two sources of heat exposure, the outside environment and internal muscle activity. The heating and cooling balance of the body depends on workplace factors such as air temperature, relative humidity in the air, workload, radiant heat sources and physical condition.
- 25.10.2 High temperatures and high levels of physical work create heat stress. The body cools itself by evaporating sweat. High humidity prevents sweat from evaporating. Humidity is therefore one of the most critical factors in evaluating the impact of heat stress.
- 25.10.3 Exposure limits provide useful guidelines to help control worker exposure to heat, but an exposure limit alone is not enough to assess the hazard. All aspects of the potential hazards and risks should be considered in a hazard assessment.
- 25.10.4 General controls apply to unacclimatized workers and include providing annual heat stress training, encouraging adequate fluid replacement, permitting self-limitation of exposure, encouraging watching out for symptoms in coworkers and adjusting expectations for workers coming back to work after an absence.
- 25.10.5 Job specific controls include engineering controls to reduce physical job demands, shielding of radiant heat, increased air movement, reduction of heat and moisture emissions at the source, adjusting exposure times to allow sufficient recovery and personal protective equipment that provides for body cooling.
- 25.10.6 The best way to control a hazard is to eliminate it. This step is impracticable when the hazard is an outdoor environmental condition.
- 25.10.7 Use labor saving devices to reduce the level of physical activity required to lower the body's metabolic heat production. (Ex. carts, conveyors or mechanical lifting devices)
- 25.10.8 Change the location of the work to a cooler work area if possible. Determine if any of the work can be done in the shade or in a ventilated or air conditioned space. (Ex. Establish a cooling station where workers can rest in a ventilated and air conditioned area such as a vehicle or tent.)
- 25.10.9 Adjust the clothing requirements, when possible. (Ex. certain tasks be done in lighter t-shirts and shorts rather than coveralls.)
- 25.10.10 Use screens, awnings or other appropriate material to shield the sun's rays if possible.
- 25.10.11 Physical factors that contribute to heat related illness is taken into consideration before performing a task. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight and breathability.
- 25.10.12 Reduce physical effort needed for a task by:
 - 25.10.12.1 Lowering the pace or intensity of work
 - 25.10.12.2 Shortening the duration of work
 - 25.10.12.3 Increasing the number and/or length of rest breaks

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- 25.10.12.4 Substituting light tasks for heavy ones
- 25.10.12.5 Increasing the number of staff to share the workload
- 25.10.13 Provide adequate supplies of drinking water. Where it is not plumbed or otherwise continuously supplied, it will be provided in sufficient quantities throughout the work shift. Encourage workers to frequently drink small amounts of water or cool fluids.
- 25.10.14 Provide rest breaks. Rest breaks allow the body time to rid itself of excess heat, reduce the production of internal body heat and provide greater blood circulation to the skin.
- 25.10.15 Allow workers to set their own work pace when possible.
- 25.10.16 Schedule physically demanding jobs for cooler periods of the day.
- 25.10.17 Carefully monitor infrequent or irregular tasks such as emergency repairs or working near hot process equipment as these tasks often result in heat stress.
- 25.10.18 Pay attention to workers with special needs. Workers should discuss limitations and precautions with their doctor.
- 25.10.19 Prepare safe work practices specific to work in hot conditions.
- 25.10.20 Select personal protective equipment based on hazard controls and following manufacturer's guidelines for use in hot conditions.
- 25.10.21 Certain types of protective equipment such as hard hats, coveralls or gloves may be necessary to protect workers from hazards. This kind of clothing or equipment may increase the heat stress burden experienced by an individual.
- 25.10.22 Eye protection that absorbs infrared radiation (heat rays) may be necessary when working near very hot objects such as molten metals. Safety sunglasses provide protection against UV radiation.
- 25.10.23 Light clothing allows maximum exposure and efficient body cooling by sweat evaporation. Long sleeve shirts and pants prevent exposure to direct sunlight.
- 25.10.24 Cotton clothing is cooler than polyester, but cotton absorbs moisture and may stay moist. Damp clothing may become uncomfortable.
- 25.10.25 Long underwear moderates extreme changes in temperatures for workers who move back and forth between very hot, dry indoor environments and cold, winter outdoor environments.
- 25.10.26 Wear light clothing that allows sweat to evaporate if possible.
- 25.10.27 Use sunscreen with minimum SPF 30 for working outside.
- 25.10.28 Cover your head when working outside.
- 25.10.29 Avoid eating large meals before working in hot environments.

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- 25.10.30 Avoid alcohol or beverages with caffeine. These make the body lose water and increase the risk of heat stress.
- 25.10.31 Check with your doctor to see if your medication may affect your heat tolerance.
- 25.10.32 Keep an eye on your coworkers for symptoms of heat stress.
- 25.10.33 Workers should not work alone in the heat for long periods of time.

25.11 FIRST AID FOR HEAT EXPOSURE

- 25.11.1 Heat stroke and hyperthermia require immediate first aid and medical attention. Delayed treatment may result in damage to the brain, kidneys and heart.
- 25.11.2 If someone shows signs of heat stress, assume that other workers may also be affected. Workers should report to a cool area for individual assessment before work continues.
- 25.11.3 Move worker to cooler area, such as an air conditioned building, vehicle or into the shade to rest.
- 25.11.4 Take off excess clothing (hard hat, boots, shirt, coveralls), but only when the worker has been moved away from the worksite to a safe area.
- 25.11.5 Give the person water to drink (only if they are able to drink it on their own).
- 25.11.6 Cool the person with cold compresses and rapid fanning.
- 25.11.7 Get medical help or take the person to a medical facility.
- 25.11.8 Heat rash - Change into dry clothes often and avoid hot environments. Rinse skin with cool water. Wash regularly to keep skin clean and dry.
- 25.11.9 Fainting - Get medical attention. Assess the need for CPR. Move to a cool area, loosen clothing, make person lie down, and if the person is conscious, offer sips of cool water.
- 25.11.10 Heat cramps - Rest briefly and cool down. Drink water or an electrolyte-containing drink. Practice gentle, range-of-motion stretching. Gently massage the affected muscle group.
- 25.11.11 Heat exhaustion - Get worker out of sun and into a shady or air conditioned location. Lay the worker down and elevate feet. Loosen clothing. Have the person drink cold water, not iced or a drink containing electrolytes. Cool the person by spraying him or her with cool water and fanning. Monitor carefully. Heat exhaustion can quickly become heatstroke. If fever, especially greater than 104°F or fainting, confusion or seizures occur call for emergency medical assistance.
- 25.11.12 Immersing a person in cold water can result in harmful overcooling. This can interfere with vital brain functions so must only be done under close medical supervision.
- 25.11.13 Do not use rubbing alcohol because it closes the skin's pores and prevents heat loss.
- 25.11.14 Do not give liquids with alcohol or caffeine as these ingredients can make conditions worse.

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25.12 TRAINING

- 25.12.1 Workers will be trained on the hazards and first aid measures for working in a cold environment and on the hazards and first aid measures for heat stress.
- 25.12.2 Prior to supervising employees and students working in outdoor environments with heat or cold exposure at or above the action levels supervisors will receive training in the following topics:
 - 25.12.2.1 The content and procedures contained in this policy.
 - 25.12.2.2 Procedures listed in this program the supervisor will follow if a worker shows signs and symptoms consistent with possible heat related illness.
 - 25.12.2.3 Specific procedures, if necessary, describing how to move or transport workers to a place where they can be reached by emergency medical services.
- 25.12.3 Workers covered by this program will be trained initially to identify the symptoms of heat stress and hazards of cold environments and receive refresher training annually.
- 25.12.4 Workers who may be exposed to heat or cold environments will be trained on the following:
 - 25.12.4.1 Environmental factors that might contribute to the risk of heat related illness (temperature, humidity, radiant heat, air movement, conductive heat sources, workload activity and duration and personal protective equipment)
 - 25.12.4.2 Personal factors that may increase susceptibility to heat related illness (age, degree acclimatization, medical conditions, drinking water, consuming alcohol, caffeine use, nicotine use and use of medications that affect the body's response to heat)
 - 25.12.4.3 The importance of removing heat retaining personal protective equipment, such as non-breathable chemical resistant clothing, during breaks
 - 25.12.4.4 The importance of frequent drinking of small quantities of water
 - 25.12.4.5 The importance of acclimatization
 - 25.12.4.6 The different types and common signs and symptoms of heat related illnesses
 - 25.12.4.7 Procedure for immediately reporting signs and symptoms of heat related illness to a supervisor or person in charge
- 25.12.5 Early recognition of the symptoms of cold exposure stress is essential in preventing serious or permanent disorders or conditions. Workers and managers involved in cold weather operations should be adequately trained to recognize the conditions and symptoms.
- 25.12.6 All training will be documented.

HEXAVALENT CHROMIUM

Revision Date: 07/2018



HEXAVALENT CHROMIUM

26.1 PURPOSE

26.1.1 The purpose of this policy is to examine the threat that hexavalent chromium (Cr VI) poses to workers' health, ensure requirements for safe work and inform workers of rights and responsibilities regarding safety and health when working around hexavalent chromium.

26.2 HEALTH EFFECTS

26.2.1 Lung cancer in workers who breathe airborne Cr VI

26.2.2 Irritation or damage to the nose, throat and lungs (respiratory tract) if Cr VI is inhaled

26.2.3 Irritation or damage to the eyes and skin if contacted with Cr VI

26.3 EXPOSURE

26.3.1 Cr VI is a heavy metal component of stainless steel. Stainless steel is widely used in industrial processes because of its resistance to corrosion.

26.3.2 The fume from welding processes may contain compounds of chromium, including hexavalent chromium and of nickel. The composition of the base metals, the welding materials used and the welding processes affect the specific compounds and concentrations found in the welding fume.

26.3.3 The major concern in the mechanical construction industry is the potential for overexposure from fumes created by welding or plasma cutting on stainless steel pipe and ducts, dust from grinding on stainless steel and from skin exposure. In most applications, engineering controls such as using localized exhaust ventilation and good welding work practices will mitigate the chances of overexposure. Respiratory protection will be required when adequate ventilation is not achievable.

26.3.4 Abrasive blasting on surfaces containing Cr VI creating airborne dispersion of Cr VI compounds and resulting in worker exposure.

26.3.5 Worker decontamination when Cr VI materials may adhere to workers' skin or clothing or to personal protective equipment worn by them.

26.3.6 Demolition where materials containing Cr VI may become airborne and present potential exposure.

26.4 PERMISSIBLE EXPOSURE LIMIT

26.4.1 ZARNAS COMPANIES must ensure that no employee is exposed to an airborne concentration of Cr VI in excess of five micrograms per cubic meter of air ($5 \mu\text{g}/\text{m}^3$) as an 8 hour time weighted average.

26.4.2 Determination must be made without regard to the use of PPE, such as respiratory protection. ZARNAS COMPANIES cannot apply the level of protection that the respirator can provide to determine whether an employee is overexposed to hexavalent chromium present in the air.

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- 26.4.3 The Cr VI standard also sets an action level, which is equal to one-half the PEL or 2.5 $\mu\text{g}/\text{m}^3$ as an 8 hour TWA.
- 26.4.4 Exposure of employees at or above the action level triggers certain other requirements of the hexavalent chromium standard even though employees are not exposed above the PEL.
- 26.4.5 ZARNAS COMPANIES will not rotate employees to different jobs to achieve compliance with the PEL.

26.5 MONITORING

- 26.5.1 Initial exposure monitoring must be conducted to document worker breathing zone exposures over the course of a full shift. A representative 8 hour TWA sample will be collected to determine employee exposure for each job classification in each work area.
- 26.5.2 Air monitoring will be performed at the beginning of each job task.
- 26.5.3 Exposure determinations must follow the current, accepted sampling and analytical method equivalent to that used by OSHA.
- 26.5.4 Sample media used for Cr VI monitoring will be analyzed using an industrial hygiene laboratory accredited by the American Industrial Hygiene Association (AIHA).
- 26.5.5 Periodic monitoring of workers is required at least every 6 months when the initial monitoring indicates TWA results are equal to or greater than the action level but below the PEL.
- 26.5.6 When initial monitoring results are greater than the PEL, additional periodic monitoring, at least quarterly, for each worker involved is required.

Exposure Scenario	Required Monitoring Activity
Below the action level ($< 2.5 \mu\text{g}/\text{m}^3$)	No periodic monitoring is required for workers represented by this monitoring
At or above the action level but at or below the PEL ($2.5 \mu\text{g}/\text{m}^3$ to $5 \mu\text{g}/\text{m}^3$)	Monitor every six months
Above the PEL ($> 5 \mu\text{g}/\text{m}^3$)	Monitor every three months

- 26.5.6.1 Periodic monitoring every 6 months or quarterly may be halted when two consecutive samples taken at least 7 days apart are equal to or below the action level.
- 26.5.6.2 When monitoring results fall below the action level, monitoring may be suspended.
- 26.5.7 Additional monitoring is required when there has been a change in production process, control equipment, personnel or work practices that may result in new or additional exposures.
- 26.5.8 A performance oriented option may be used to determine the initial 8 hour TWA exposure for each worker on the basis of any combination of air monitoring data, historical monitoring data or objective data sufficient to accurately characterize exposure to Cr VI.
- 26.5.9 Workers will be informed in writing of exposure monitoring results within 5 working days after test.

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26.5.9.1 When the PEL has been exceeded, notification to the affected worker will include the control measures utilized to reduce the exposure to below the PEL.

26.5.10 Where air monitoring is performed to comply with the requirements ZARNAS COMPANIES will use a method of monitoring and analysis that can measure Cr VI to within an accuracy of plus or minus 25% and can produce accurate measurements to within a statistical confidence level of 95% for airborne concentrations at or above the action level.

26.5.11 ZARNAS COMPANIES will provide affected employees an opportunity to observe any monitoring of employee exposure to Cr VI.

26.5.11.1 When observation of monitoring requires entry into an area where the use of PPE is required, ZARNAS COMPANIES will provide the observer with clothing and equipment and will assure that the observer uses PPE and complies with all other applicable safety and health procedures.

26.6 ENGINEERING CONTROLS

26.6.1 Ventilation such as local exhaust systems that capture airborne Cr VI near its source and remove it from the worksite.

26.6.2 Local exhaust or shop fans to extract fumes from work areas.

26.6.3 Dust collection systems with HEPA filters.

26.6.4 Substitute less toxic material or a process that results in lower exposures for a process that causes higher exposures.

26.6.5 Isolation such as placing a barrier between employees and source of exposure.

26.6.6 Use enough ventilation or exhaust at the arc or both to keep fumes and gases from your breathing zone and general area.

26.6.7 Use localized exhaust ventilation to remove fumes and gases at the source in still air. Keep exhaust trunk/hood close to the source in order to keep fumes and gases from breathing zone.

26.6.8 Use air blowers to draw fumes away from you and your immediate work area.

26.6.9 If ventilation is questionable, use air sampling to determine the need for corrective measures.

26.6.10 Use welding rods that produce a low fume. 90% of the fume can come from the rod. Larger diameter rods produce much higher emissions than electrodes of smaller diameter. Welding guns that extract fumes can capture 95% of the fume.

26.6.11 Where the employer can demonstrate that a process or task does not result in any employee exposure to Cr VI above the PEL for 30 or more days per year (12 consecutive months), the requirement to implement engineering and work practice controls to achieve the PEL does not apply to that process or task.

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26.7 SAFE WORK PRACTICES

- 26.7.1 All residues are removed before welding or cutting.
- 26.7.2 Use the safest welding method for the job. Stick welding makes much less fume than flux core welding. Tig welding reduces Cr VI emissions by 90%.
- 26.7.3 In a confined space, follow all the OSHA confined space rules (ex. air monitoring, not storing torches in the space, ventilation).
- 26.7.4 Position welding hood so that fumes will not rise up under it and into breathing zone.
- 26.7.5 Implement good housekeeping procedures. Keep area as free as practicable of accumulations of dust and buildup. All surfaces must be maintained as clean as practicable to minimize accumulation of Cr VI containing substances, dust or particles.
- 26.7.6 Vacuums with HEPA filters should be used to keep dust emissions at a minimum.
- 26.7.7 Do not blow dust from clothing with air hose. Doing so can embed the dust particles into your skin and eyes and expose others to airborne particles.
- 26.7.8 All spills and releases of Cr VI containing material must be cleaned up promptly.
- 26.7.9 Employees are not to eat, drink, smoke, chew tobacco or gum or apply cosmetics in areas where skin or eye contact with Cr VI occurs or carry the products associated with these activities or store these products in these areas.
- 26.7.10 Designate an area on the worksite that is free of Cr VI for workers to consume food or beverages.
- 26.7.11 Wash hands and face at the end of every shift and before eating, drinking, smoking, chewing gum, applying cosmetics or using the bathroom.
- 26.7.12 Where work clothing is required to be worn in place of street clothing to prevent skin exposure to Cr VI, change rooms and washing facilities will be provided for decontamination and to prevent cross-contamination. Change rooms must include separate storage facilities for work clothing and for street clothes. Washing facilities must be readily accessible to workers.
- 26.7.13 All storage or shipping containers will be labeled with the following *Danger – Contains Cr VI – Cancer Hazard – Harmful if Inhaled or Swallowed – Use Only with Adequate Ventilation or Respiratory Protection.*
- 26.7.14 Collection of waste, scrap, debris or other materials contaminated or containing Cr VI must be in impermeable containers or bags and labeled meeting hazard communication requirements.
- 26.7.15 Waste containing significant amounts of chromium may be subject to hazardous waste regulations and the corresponding generation, treatment and disposal requirements.
- 26.7.16 Work areas where worker exposure to Cr VI is or can reasonably be expected to exceed the OSHA PEL must be distinct and access limited to only workers authorized to enter. The entrance to regulated areas must be posted with signs that read *CHROMIUM VI REGULATED AREA – AUTHORIZED PERSONNEL ONLY.*

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26.7.17 A copy of this program and the OSHA Cr VI standard for construction will be made available to all affected project workers.

26.8 PERSONAL PROTECTIVE EQUIPMENT

26.8.1 PPE will be provided where an eye or skin hazard may exist to Cr VI to workers at no cost to them. Appropriate PPE to include the following:

26.8.1.1 Long-sleeved shirt, welding jacket or welding sleeves and long pants

26.8.1.2 Tyvek suits if necessary

26.8.1.3 Welding gloves

26.8.1.4 Safety glasses or goggles

26.8.1.5 Face shield over eye protection when grinding

26.8.1.6 Welding helmet over eye protection when welding

26.8.1.7 Appropriate respirator when needed

26.8.2 ZARNAS COMPANIES will clean, launder, repair and replace all protective clothing and equipment required by this section as needed to maintain its effectiveness.

26.9 RESPIRATORY PROTECTION

26.9.1 If the ventilation is not adequate, such as confined spaces, respiratory protection is required.

26.9.2 When respiratory protection is required, workers must be properly trained before starting work.

26.9.3 Respiratory protection is required during:

26.9.3.1 Periods necessary to implement feasible engineering and work practice controls

26.9.3.2 Work operations, such as maintenance and repair activities, for which engineering and work practice controls are not feasible

26.9.3.3 Work operations where all feasible engineering and work practice controls have been implemented and controls are not sufficient to reduce exposures to or below the PEL

26.9.3.4 Work operations where employees are exposed above the PEL for fewer than 30 days per year and the employer has elected not to implement engineering and work practice controls to achieve the PEL

26.9.3.5 Emergencies

26.9.4 Where respirator use is required by this section, ZARNAS COMPANIES will institute a respiratory protection program in accordance with 1910.134, which covers each employee required to use a respirator.



26.10 MEDICAL SURVEILLANCE

26.10.1 ZARNAS COMPANIES will make medical surveillance available at no cost to the employee and at a reasonable time and place, for all employees:

26.10.1.1 Who are or may be occupationally exposed to Cr VI at or above the action level for 30 or more days a year

26.10.1.2 Experience signs or symptoms of the adverse effects associated with Cr VI exposure

26.10.2 ZARNAS COMPANIES will assure that all medical examinations and procedures required by this section are performed by or under the supervision of a PLHCP.

26.10.3 ZARNAS COMPANIES will provide a medical examination:

26.10.3.1 Within 30 days after initial assignment, unless the employee has received a Cr VI related medical examination within the last twelve months

26.10.3.2 Annually

26.10.3.3 Within 30 days after a PLHCP's written recommendation of an additional examination

26.10.3.4 Whenever an employee shows signs or symptoms of the adverse health effects associated with chromium (VI) exposure

26.10.3.5 Within 30 days after exposure during an emergency which results in an uncontrolled release of Cr VI

26.10.3.6 At the termination of employment, unless the last examination was less than six months prior to the date of termination

26.11 RECORDKEEPING

26.11.1 An accurate record of all worker personal air sampling and other air monitoring related to determining Cr VI exposure for ZARNAS COMPANIES employees must be completed and maintained that includes the following:

26.11.1.1 Industrial hygiene sampling surveys

26.11.1.2 Specific information on the sample date, worker(s) sampled, job classification, process or task sampled, materials used, PPE worn, sample duration, air sampling and analytical method

26.11.2 For historical monitoring data, an accurate record of determination must include:

26.11.2.1 Confirmation that collected data using acceptable sampling and analytical methods

26.11.2.2 Description of the process that matches the task, conditions, materials, equipment and process for which the exposure is being determined

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26.11.3 For objective data, an accurate record of information that is relied upon to determine worker exposure must include the type of chromium containing material, description of the process, activity or operation or any other relevant information used to support a comparable exposure assessment.

26.11.4 Medical monitoring records related to Cr VI must be maintained for each employee for thirty years beyond their duration of employment. ZARNAS COMPANIES will maintain and make available an accurate record of all employee exposure monitoring, medical surveillance and training records. Medical monitoring records will be retained in the employee medical file and maintained at the corporate office.

26.12 TRAINING

26.12.1 Workers who may be exposed to airborne Cr VI above the action level or anticipate working on projects where they could be exposed to airborne Cr VI above the action level must complete initial Cr VI exposure training. Training will cover:

26.12.1.1 Regulatory requirements, exposure limits, potential hazards including toxicity and physical characteristics and medical monitoring requirements

26.12.1.2 Site specific Cr VI hazards, discussion on the location and tasks associated with potential exposure and associated control measures

26.12.1.3 Information contained in the site specific safety plan or JSA created for the project

26.12.1.4 Purpose, proper use and limitation of PPE and respirators

26.12.1.5 Purpose and a description of the medical surveillance program

26.12.1.6 Engineering controls and work practices associated with the job assignment

26.12.1.7 Review of this policy

26.12.2 Subcontractors are responsible for complying with all applicable training requirements relating to Cr VI exposure and for providing the training necessary to complete their tasks safely.

26.12.3 ZARNAS COMPANIES will provide initial training prior to or at each initial assignment.

26.12.4 ZARNAS COMPANIES will ensure the training is understandable and ensure each employee can demonstrate knowledge of the health hazards associated with Cr VI and measures to protect themselves from exposure.



HYDROBLAST SAFETY

27.1 PURPOSE

27.1.1 The purpose of this policy is to provide standards for the safe operations of hydroblasting or water jet cleaning equipment with rated pressures up to 2700 bar (40,000 PSI). For the purposes of this policy, the term *hydroblasting* covers all hydroblasting and water jetting activities.

27.2 RESPONSIBILITIES

27.2.1 Operators

27.2.1.1 Provide proper location for setup of equipment

27.2.1.2 Verify hydroblast equipment set up does not interfere with plant, equipment or operations

27.2.1.3 Ensure electrical equipment in the work area has been isolated and protected from water ingress

27.2.1.4 Operators or equipment owner must issue the appropriate work permit or isolation permit prior to hydroblasting work commencing (in accordance with site procedures)

27.2.1.5 Ensure barricades and signage are in place

27.2.2 Maintenance/Contractors

27.2.2.1 Review procedures to ensure the minimum requirements are met

27.2.2.2 Ensure hydroblasting equipment is in good operational condition and safety features are functional. Equipment must comply with the requirements ensure personnel operating the equipment are appropriately trained and follow established procedures

27.2.2.3 Be aware of nature of injuries and post-accident infections caused by high pressure water jetting and immediate first aid treatment until medical treatment can be arranged

27.3 GENERAL

27.3.1 This policy provides guidance for the operation of hydroblasting equipment. It describes methods for eliminating or reducing hazards and risks associated with hydroblasting.

27.3.2 This policy provides guidance for high pressure hydroblasting systems pressurized by positive displacement pumps with an output capability greater than 400 bar liters/minute, high pressure hydroblasting operations carried out at pressures above 200 bar and includes hydroblasting operations involving the use of additives and abrasives and hydroblasting operations below 200 bar where there is a foreseeable risk of injury to operators or other persons.

27.3.3 As much as conceivably possible, manual hydroblasting activities such as shotgunning, will be replaced by automated cleaning equipment. Manual hydroblasting work must go through a formal review and approval every time a non-automated cleaning operation occurs. An assessment of the



particular job where non-automated work will take place must be completed. The assessment will identify any and all additional safeguards required to safely perform the non-automated work.

27.3.4 Pressure washing hydroblasting equipment may be operated by a single individual. This person is usually a mechanic, laborer or process person and not a specialty contractor. Common use for this equipment is concrete cleaning, cleaning pump bases and other routine housekeeping work.

27.3.5 High pressure hydroblasting is normally performed by a specialty hydroblasting contractor. They are expected to have detailed safety procedures considering equipment requirements, operating procedures and operator qualifications. The hydroblasting contractor is responsible for compliance with their written procedures. Single person operation of this equipment is permitted where:

27.3.5.1 Operator is physically isolated from the pressurized water flow

27.3.5.2 There is no risk of the operator being exposed to the jet impact

27.3.5.3 Presence of other hazards does not expose operator to other occupational safety risk

27.3.6 Hydroblasting is an activity with significant inherent hazard. If work tasks are approached inappropriately, significant risks with the potential for serious injury, including fatality are possible.

27.3.7 The system will be shut down and depressurized any time:

27.3.7.1 The barricade is violated

27.3.7.2 Equipment malfunctions (special attention should be given to the dump control valve)

27.3.7.3 Repairs need to be made or the system is left unattended.

27.4 SAFE WORK PRACTICES

27.4.1 Hydroblasting activity is to be avoided and other methods of cleaning reviewed for practicality (ex. chemical cleaning). An important property of the hydroblasting process is that it can emulsify and remove oil and grease from a surface as it is blasted. This does not preclude the need for proper degreasing procedures prior to hydroblasting.

27.4.2 Pressure washing does not include line moleing or lancing type activities.

27.4.3 Job plans must be established for all pressure washing activities before work execution. At a minimum, this should include basic job steps, parameters and safe work practices. If a job safety analysis (JSA) is performed on a specific pressure washing job, then this JSA must be reviewed each time the job is performed. A copy of the JSA must be on the jobsite with permits issued for that job attached. Each different job must have a JSA because not all pressure washing jobs can be covered by a single JSA.

27.4.4 Objects to be cleaned will never be held manually. Prior to starting, ensure that the portion of the structure to be cleaned or cut is properly supported so that it will remain suspended. If the portion of the structure to be cleaned or cut is not rigged, determine with the customer contact how much of the structure to leave uncleaned or uncut until the support is in place.

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- 27.4.5 Personnel must remain 10' from the cutting head.
- 27.4.6 Any electrical equipment in the immediate area of the pressure washing activity that presents a hazard to the operator or could damage equipment will be de-energized, shielded or otherwise made safe.
- 27.4.7 Pressure washing on process piping or equipment that contains a hazardous energy source will require a safe work permit. The system will be completely flushed with sufficient water to remove any contaminants before installing the nozzle.
- 27.4.8 Pressure washing wands will not be pointed at personnel.
- 27.4.9 During and at the completion of the job, the hydroblasting crew is responsible for controlling debris/waste and maintaining good housekeeping on the jobsite. This includes, but is not limited to, the elimination of slip, trip and fall hazards including proper hose placement and proper disposal of trash, contaminated PPE and chemical/product wastes generated from the cleaning service.
- 27.4.10 The area can be barricaded with red chain for high pressure hydroblasting water cutting or yellow chain for pressure washing. The barricaded area will encompass all of the hoses in use at the hydroblasting work area. When working above ground level, barricades will be required below.
- 27.4.11 Where hydroblasting activity is required, remotely controlled mechanical cleaning devices should be considered in order to separate the operator from the high pressure water hazards.
- 27.4.12 At least one wheel on any staged mobile equipment must be double chocked against accidental movement when parked on location.
- 27.4.13 The back thrust force which is produced by a jetting gun and the amount of force the operator must withstand will not be greater than $\frac{1}{3}$ of their body weight. The hydroblasting team must always consist of a pump operator and a nozzle operator. Rotating operators in and out of the job is also recommended because of the physical demand of the job duration.
- 27.4.14 An anti-withdrawal device must be used on all lances and line moleing jobs. The device must be securely attached to the equipment being cleaned. The device is used to prevent the lance from exiting the tube in an uncontrolled manner. The manual use of hydroblasting equipment is only utilized as a last resort when the use of other automated or mechanical equipment cannot be used.
 - 27.4.14.1 The combined length of the hose connection, stinger, and nozzle shall be a minimum of 1.5 times the diameter of the pipe being cleaned unless the pipe being cleaned has a T then the combined length shall be 3 times the diameter of the largest pipe.
- 27.4.15 In vertical tube sheet applications, to prevent the potential of a water cut to the foot, that gap between the snorkel and the tube sheet, must be protected by a physical barrier to prevent contact with the lance operator. This shielding is not required if indexing is automated.
- 27.4.16 The blasting equipment should be setup in an area that is not congested, out of major personnel traffic routes and is a safe distance from operating equipment as determined by the operating pressure and flow rate of the hydroblasting equipment.



- 27.4.17 If possible, the hydroblasting equipment and work should be located offsite and equipment to be cleaned transported to the remote cleaning site.
- 27.4.18 If access to a blasting area is requested or an unauthorized person enters the blasting area, the contractors' employee must stop operations. Work must not be resumed until the area is cleared.
- 27.4.19 All personnel, when the system is under pressure, will not be within 6' of pressurized connections unless the equipment is shielded or guarded.
- 27.4.20 Hydroblasting systems should be depressurized if not in use and left unattended or replacement of components or repairs are being made to the system.
- 27.4.21 During cleaning operations, accumulations of materials may form at the pipe/tube openings. Work should be stopped and the materials removed when a safe work position or working surface cannot be maintained. This is particularly important where the work area is confined, such as platforms and scaffolds and where material debris may accumulate from the cleaning process.
- 27.4.22 All equipment being cleaned will be adequately shielded against flying debris/chemicals and high pressure water stream that could pose a potential injury or exposure to someone. Examples include but are not limited to plywood, metal sheeting or water blast curtains.
- 27.4.23 A trained attendant is required to be present for all operating equipment at all times. The attendant must be close enough to shut down the equipment in an emergency.
- 27.4.24 All jobs require a line-of-sight between the equipment attendant and the hose end equipment operator. If direct line-of-sight cannot be achieved, radio communication or use of an additional trained attendant for line-of-sight must be used to assist in quickly de-energizing the equipment.

27.5 PERSONAL PROTECTIVE EQUIPMENT

- 27.5.1 PPE worn by hydroblasting equipment operators should reflect the activities being performed.
- 27.5.2 PPE will address the hazards associated with pressure washing, which could include but is not limited to water cuts, chemical contact, noise, respiratory consideration for Legionnaires' disease and chemicals and any other recognized hazards for the task.
- 27.5.3 The following PPE is mandatory for operators or those within the blasting area when hydroblasting:
 - 27.5.3.1 Hard hat
 - 27.5.3.2 Mono goggles
 - 27.5.3.3 Face shield
 - 27.5.3.4 Hearing protection
 - 27.5.3.5 Heavy duty rain suit or hydroblasting suit
 - 27.5.3.6 Protective gloves (dependent on the material/substance being handled or exposed to and the hazard and risk presented to the operators)



- 27.5.3.7 Hydrojet safety rubber boots (with built in metatarsal protection) with steel toe caps
- 27.5.3.8 Other equipment as required if a hazardous chemical is involved
- 27.5.4 The work permit and job safety analysis (JSA) will identify if any additional or specialized personal protective equipment as necessary.

27.6 EQUIPMENT

- 27.6.1 The hydroblasting equipment area must be barricaded using red or yellow barricade tape with white lettering stating *DANGER: HIGH PRESSURE EQUIPMENT IN USE*. Barricade tape should extend out 30 feet in all directions from blasting equipment. Hoses extending from equipment to blasting area should be surrounded by barricade tape and signs.
- 27.6.2 Barriers must be placed to shield operations if it is not possible to isolate the prescribed area.
- 27.6.3 Hydroblasting equipment has varying working pressures and flow rates. The operating pressure should never exceed the rated pressure of the equipment.
- 27.6.4 The pumping unit must be equipped with a safety valve and/or rupture disc capable of rapidly relieving the full capacity of the pump. These safety devices should be checked to ensure a tag is attached indicating they have been properly tested and are operational.
- 27.6.5 The pumping unit should be located to minimize the length of hoses required. Considerations should be given to the distance from operating equipment. Select a location that does not require running hoses through an active access way or work area. Care must be taken to protect hoses from damage by vehicular traffic, hot lines/equipment or external abrasion.
- 27.6.6 Hydroblasting equipment will be grounded per site and hydroblasting company requirements. Blasting equipment must be grounded to minimize static electricity build-up. Equipment being blasted must also be grounded.
- 27.6.7 High pressure hose and fittings, connection fittings and couplings will be manufactured to be compatible with the hose. All components of the system should be compatible with the service pressure of the pump and only fittings marked with the maximum allowable working pressure (MAWP) will be used. Fittings designed for pressure less than the service pressure of the pump will never be used in a higher pressure application. NPT or pipe thread connections will not be used at pressures greater than 15,000 psi.
- 27.6.8 All shotgun whip hoses must be shrouded to protect the shotgunner against accidental rupture of the whip hose. Shotgun shrouds must be constructed in a manner that protects the shotgunner against a serious water cut. The protective shroud must be a minimum of 6' in length.
- 27.6.9 Quick connect/disconnect fittings are not permissible for use for hydroblasting. Hose connections must have a secondary joining mechanism to prevent whipping if the connection is broken. Whip locks will be used on all pressured hose connections to prevent the hose from whipping in the event the coupling breaks or becomes disconnected.



- 27.6.10 All non-rotating equipment high pressure hose assemblies must include whip checks to protect personnel from excessive movement of hoses in case of a hose rupture or a blown end fitting.
- 27.6.11 Where the water dumps through a dump system and is not immediately released to the open air, but passed into a dump line, the dump line must be secured, so that it does not whip when activated. Also ensure that the dump system is clear of obstructions.
- 27.6.12 Minimum length of the shotgun nozzle is 48 inches. Minimum length of entire shotgun is 66 inches.
- 27.6.13 Hydroblasting shotguns require a double action switch which requires disengaging the safety latch. It requires the use of both hands before the trigger can be engaged. The double action switch should be positioned so that both the operator's hands are required to initiate high pressure water flow.
- 27.6.14 Blast equipment must be operated from approved work surfaces. Due to excessive back thrust exerted on the operator, the use of ladders and A-frames are not acceptable as work platforms. All hydroblasting must be completed from a stable work surface.
- 27.6.15 A dump valve which will immediately dump all the water pressure when the control is released is the only approved fail safe control. When lancing, a foot or hand operated fail safe control with guard should be manipulated by the lance operator. In some operations such as lancing exchanger tubes or line moleing another person must be used to assist with the lance or hose. Only the lance operator (person nearest the working end of the lance) should operate the fail safe device.
- 27.6.16 At no time should the fail safe control be tied down or locked into position. Injury could result if the fail safe is bypassed or locked.
- 27.6.17 Stinger rods, longer in length than the diameter of the pipe will be used when line moleing large bore piping 15 cm and larger. A stinger rod is a rigid piece of pipe affixed to a line mole to prevent reversing of mole in the line.
- 27.6.18 A marker should be placed no less than 4 feet from the end of the hose to indicate the end of the lance or line mole. This marker should be a highly visible type material. This will serve as a signal to the operator that the end of the lance is near and pressure should be relieved. This marker should be on the hose and not on the stinger rod or lance.

27.7 INSPECTIONS

- 27.7.1 Pressure washing units will be inspected prior to use and operated per the manufacturer's recommendations. Periodical system inspections will follow the manufacturer's recommendations or site/company procedures. Alterations or modifications are not permitted. The maximum operating pressure of the pressure washer will be posted/available on the machine.
- 27.7.2 The operating pressure of the high pressure hose and fittings should not exceed $\frac{1}{3}$ of the rated pressure. Hoses should be inspected before each job and tested every three months at 125% of rated pressure. Hoses must be tagged with the latest test date and test pressure.
- 27.7.3 Hydroblasting companies will have an equipment inspection program that ensures equipment is ready is ready for service before job identification or notification. Before job notification, the inspection of high pressure hoses and flex lances must include the visual inspection for hose



deficiencies (bulges, cracks, etc.), integrity of the compressed fittings, outer cover and no evidence of broken wire braids. If one or more broken wire braids exist the hose must be removed from service and discarded.

- 27.7.4 When large areas are hydroblasted, flash rusting which obscures the original blast standard may occur before an inspection can be carried out. Establishing the required standard by blasting a small test area prior to the main blast may help, providing the rest of the job is blasted to the same standard. Methods for ensuring the rest of the job is blasted to the same standard will vary from project to project.
- 27.7.5 It is difficult to properly clean areas of difficult access such as the backs of stiffening bars without the use of specially designed angled nozzles. This is because it is impossible to ricochet water into these areas in the same manner as abrasives. Special attention must therefore be given to these areas during inspections.
- 27.7.6 A visual inspection will be made of the shroud prior to each use. The hose shroud will be inspected for inner and outer integrity, such as excessive wear and breakdown of reinforcement wire braiding, at a minimum on a quarterly basis. These quarterly inspections must be documented and records made available at ZARNAS COMPANIES jobsites where work is performed.
- 27.7.7 All component parts and fittings will be checked for correct size and rating for the unit. Whip checks are required at all hose to hose connections.
- 27.7.8 Once equipment is staged, all hose assemblies will be inspected for leaks and/or damage.
- 27.7.9 All high pressure hoses with outer rubber or plastic covering construction and assemblies, including shotgun whip hoses/assemblies, must be tested quarterly. Records of inspections/testing will be maintained by the hydroblasting company using hydroblasting equipment.
- 27.7.10 All hose assemblies will be inspected for the following criteria:
 - 27.7.10.1 Assemblies will be free from external damage such as broken wires or excessive braids showing.
 - 27.7.10.2 All end fittings and couplings are in good order and satisfy pressure rating for the unit operating pressure.
 - 27.7.10.3 Only threaded hose connections are to be used at the pump connection.
- 27.7.11 Hoses must have tags or bands to reflect the current testing period.
- 27.7.12 All pressure relief systems on pumps are inspected and tested, at minimum on a quarterly basis. This includes a visual inspection to verify overall physical condition of the pressure relief systems.

27.8 TRAINING

- 27.8.1 All personnel performing pressure washing work will be properly trained on the equipment which will be operated by the personnel. These personnel include ZARNAS COMPANIES personnel, hydroblasting company personnel and any other contractor or subcontractor personnel performing this type of pressure washing work at a ZARNAS COMPANIES site.

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- 27.8.2 The hydroblasting contractor is responsible for ensuring all personnel assigned to hydroblasting operations are satisfactorily trained in the safe operation of equipment required to perform the task at hand. At a minimum training should cover:
 - 27.8.2.1 System operation
 - 27.8.2.2 PPE
 - 27.8.2.3 Energy isolation of equipment
 - 27.8.2.4 Confined space entry
 - 27.8.2.5 Fall protection
 - 27.8.2.6 Correct body positioning for tasks
 - 27.8.2.7 Cutting action
 - 27.8.2.8 Control devices
 - 27.8.2.9 Equipment maintenance
 - 27.8.2.10 Compatibility
 - 27.8.2.11 Hoses
 - 27.8.2.12 Stance
 - 27.8.2.13 Using shotguns
 - 27.8.2.14 Flex lancing
 - 27.8.2.15 Rigid lancing
 - 27.8.2.16 Line moleing
 - 27.8.2.17 Installation of anti-withdrawal safety devices
- 27.8.3 All hydroblasting companies will have a written energy isolation procedure which addresses effectively isolating and de-energizing water cleaning and cutting equipment when it is serviced, repaired, installed, relocated, manual indexing (exposed to the nozzle end), etc.
- 27.8.4 Documentation of this training will be maintained by the hydroblasting company and will be available to ZARNAS COMPANIES upon request.



HYDROGEN SULFIDE

28.1 PURPOSE

28.1.1 The purpose of this policy is to ensure that effective safe work practices are used to protect employees from occupational exposure to hydrogen sulfide (H₂S).

28.2 SCOPE

28.2.1 This policy covers work performed by ZARNAS COMPANIES employees and applies to all personnel at ZARNAS COMPANIES owned, operated or maintained facilities where an exposure to airborne H₂S at or above 10 parts per million (ppm) may occur.

28.2.2 Use of this policy is required when any of the following activities are conducted in an area where H₂S could be present:

28.2.2.1 Entry into confined spaces

28.2.2.2 Commodity sampling

28.2.2.3 Working on corroded pipe/line repairs

28.2.2.4 Leak response

28.2.2.5 Operating process equipment in areas where H₂S is known to be or may be present

28.2.2.6 Other activities which H₂S monitoring has determined H₂S in concentrations \geq 10 ppm

28.3 RESPONSIBILITIES

28.3.1 Supervisor

28.3.1.1 Provide leadership to ensure safety policies and procedures are fully implemented

28.3.1.2 Ensure that employees are knowledgeable of the H₂S requirements for the worksite

28.3.1.3 Inform all personnel of the locations where H₂S may be expected

28.3.1.4 Ensure that all monitoring is completed

28.3.1.5 Ensure all warning systems are posted, mounted or labeled, as appropriate

28.3.2 Employee

28.3.2.1 Follow H₂S requirements at the jobsite as described within this policy

28.3.3 Safety director

28.3.3.1 Assist with monitoring by providing information and instruction at the worksite

28.3.3.2 Assist with the selection, location and usage of fixed monitoring systems

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28.3.3.3 Coordinate the development and revisions to this procedure

28.3.3.4 Coordinate the implementation and training of this procedure

28.4 CHARACTERISTICS

28.4.1 Hydrogen sulfide is colorless, so you cannot depend upon vision to detect it.

28.4.2 H₂S is heavier than air, so it tends to settle in low-lying and non-well ventilated areas. Even when using mechanical ventilation, employees should ensure that gas is not being directed to an area where it can settle on the platform or to other lower lying areas on the jobsite, where other individuals will be working. Additionally, because hydrogen sulfide is heavier than ambient air (approximately 19%), it can travel along the ground. In sufficient enough concentrations, it may find an ignition source before wind currents can break it up.

28.4.3 H₂S is soluble in liquids and therefore mixes easily with drilling mud and other drilling fluids. On still foggy days, hydrogen sulfide can accumulate at dangerous levels (fog is simply minute droplets of liquid suspended in air).

28.4.4 H₂S causes deformation and/or fracturing of certain metals (stress cracking) in pressurized lines, and especially at electrical contacts due to high corrosives.

28.4.5 H₂S is extremely flammable, in a range of 4.0% to 44% (NIOSH), by volume in air. With 4.0% representing the LEL (lower explosive limit), and 44% representing the UEL (upper explosive limit). Employees, for the purpose of this policy, will not work in any hydrogen sulfide contaminated location where detectable levels, measured by a direct reading calibrated instrument, reveals levels of .04% or less (preferably 0%).

28.4.6 When ignited, hydrogen sulfide produces sulfur dioxide SO₂.

28.5 HEALTH EFFECTS

28.5.1 H₂S is an irritant and a chemical asphyxiant with effects on both oxygen utilization and the central nervous system. Its health effects can vary depending on the level and duration of exposure.

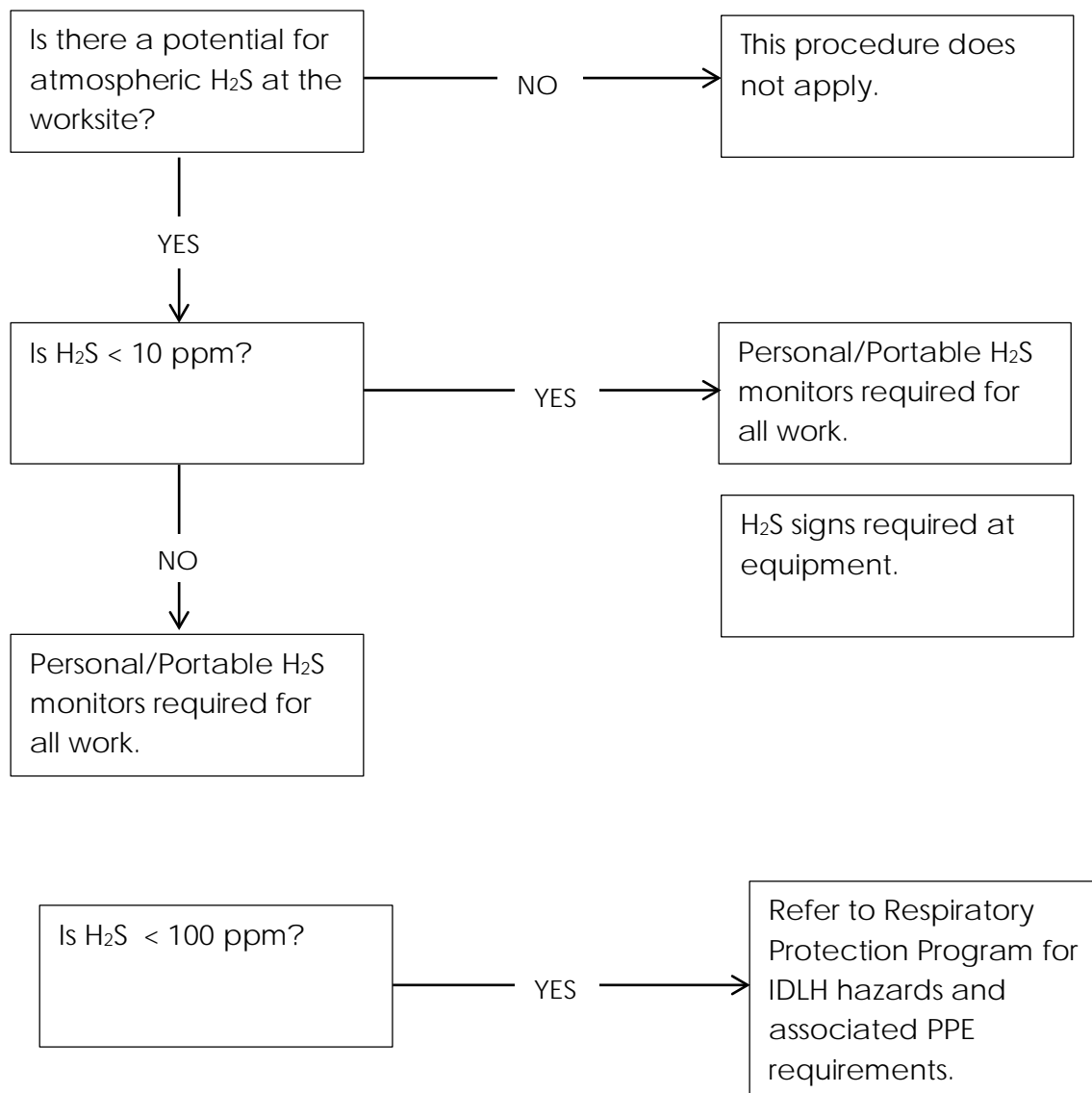
28.5.2 Low concentrations irritate the eyes, nose, throat and respiratory system (ex. burning/tearing of eyes, cough, shortness of breath). Asthmatics may experience breathing difficulties.

28.5.3 The effects can be delayed for several hours or sometimes several days, when working in low level concentrations. Repeated or prolonged exposures may cause eye inflammation, headache, fatigue, irritability, insomnia, digestive disturbances and weight loss.

28.5.4 Moderate concentrations can cause more severe eye and respiratory irritation (including coughing, difficulty breathing, accumulation of fluid in the lungs), headache, dizziness, nausea, vomiting, staggering and excitability.

28.5.5 High concentrations can cause shock, convulsions, inability to breathe, extremely rapid unconsciousness, coma and death. Effects can occur within a few breaths and possibly a single breath.

28.6 PROCESS OVERVIEW



28.7 GENERAL INSTRUCTIONS

28.7.1 A method of protecting employees from exposure to atmospheric concentrations of H₂S equaling or exceeding 10 ppm will be provided. Acceptable methods include, but are not limited to:

- 28.7.1.1 Requiring all personnel to wear proper and fully functioning supplied air respiratory protection equipment before entering the area
- 28.7.1.2 Installing fixed H₂S monitoring equipment
- 28.7.1.3 Using personal H₂S monitors
- 28.7.1.4 Properly ventilating the facility to maintain H₂S concentrations in the work area atmosphere less than 10 ppm, confirmed by continuous monitoring



28.7.2 Testing the facility before entry and continuously while in the facility using portable H₂S detection equipment to verify that H₂S concentration in the worksite atmosphere does not exceed 10 ppm.

28.8 DETECTION AND MONITORING

28.8.1 If an SDS is not available for a produced oil or gas stream, testing for the presence of H₂S must be done for each new type of material soon after it has been received so the degree of hazard can be assessed. Affected employees will be advised of monitoring results and what precautions to take.

28.8.2 Continuous fixed monitoring systems are used to constantly measure the concentration of H₂S in the atmosphere. A fixed monitoring system should be considered where process equipment loss of containment may create harmful levels of H₂S where personnel are likely to be working or where a significant release may pose a community threat.

28.8.3 Examples of such sites are meter stations and pump rooms that handle products containing levels of H₂S that may exceed 10 ppm in airborne samples.

28.8.3.1 Fixed monitors are set at 10 ppm to alert and warn personnel to use respiratory protection equipment if they are to remain in the area for an extended period.

28.8.3.2 If the fixed monitor has a second alarm, it will be set to alarm at 20 ppm.

28.8.3.3 The fixed monitors will be tested monthly, or as recommended by the manufacturer. The results of these tests will be recorded.

28.8.3.4 Odor is not considered an effective indicator of H₂S. Individuals may not be able to smell an odor after an extended period of exposure to it, because they become accustomed to the odor.

28.8.4 Personal and portable H₂S monitor/alarm units are designed to provide workers with an additional measure of protection by warning of potentially hazardous levels of H₂S within the immediate work area. These personal H₂S monitor units should be set to alarm (both visible and audible) at 10 ppm to alert and warn personnel to evacuate the area or to use respiratory protection equipment (SCBA) if they are to remain in the area.

28.8.5 Contact the safety director for information regarding approved H₂S monitoring devices.

28.9 WARNING SYSTEMS

28.9.1 When mixtures containing hydrogen sulfide are present in the workplace and exposures above the exposure limits can occur, appropriate hazard communication practices should be implemented. This includes MSDSs, chemical inventory, container labeling, warning systems (ex. signs, flags, windsocks) and training.

28.9.2 A sign reading *DANGER - H₂S May Be Present* will be conspicuously located at points where equipment can be opened and H₂S released to the atmosphere

28.9.3 These points may include:

28.9.3.1 Base of the stairway on tanks



- 28.9.3.2 Sample points
- 28.9.3.3 Barge/railcar loading and unloading facilities
- 28.9.3.4 Valve boxes
- 28.9.3.5 Scraper traps
- 28.9.3.6 Pig launch or receipt stations
- 28.9.3.7 Other locations where monitoring has determined H₂S in concentrations equal to or above 10 ppm could be present and could pose a danger to personnel.

28.9.4 Above ground pipelines that contain product with concentrations above 1% or 10,000 ppm H₂S will be labeled H₂S with black letters on a yellow band. Letters should be at least 3" high and visible from any direction from which personnel could approach.

28.9.5 Wind socks will be located and maintained at facilities, where atmospheric H₂S at the source exceeds 10 ppm. The wind socks should be strategically mounted throughout the facility where they are visible to personnel.

28.10 PERSONAL PROTECTIVE EQUIPMENT

28.10.1 Wear PPE to prevent eye contact. Selection of eye protection depends on the work operations conducted and other personal protective equipment worn. It may include safety glasses, chemical goggles, face shields or a full face piece respirator. See SDS for more information.

28.10.2 Follow instructions and requirements provided in the *Respiratory Protection* policy. If suspected area is a confined space, refer to *Confined Space Entry* policy.

28.10.3 ZARNAS COMPANIES, acceptable respirators:

28.10.3.1 Full face piece pressure-demand self-contained breathing apparatus (SCBA) with a service life of 30 minutes. Pressure demand respirators are positive pressure atmosphere-supplying respirators that admit breathing air to the face piece when the positive pressure is reduced inside the face piece by inhalation.

28.10.3.2 Full face supplied air respirator (SAR) airline with auxiliary self-contained air supply.

28.10.4 Respirators provided solely for escape will be certified by NIOSH or have equivalent approval, for escape from atmospheres containing hydrogen sulfide. Escape-only respirators have a single function: to allow a person working in a normally safe environment sufficient time to escape from suddenly occurring respiratory hazards. Selection of an escape-only respirator should include consideration of factors such as maximum expected concentration, escape time (ex. exposure duration), breathing rate, respirator service life and eye irritation. Supplied air escape-only respirators are recommended.

28.10.5 A self-contained breathing apparatus (SCBA) or a supplied airline respirator with an escape bottle with a full face mask must be worn whenever:

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- 28.10.5.1 H₂S concentration in atmosphere is at or suspected to be at 10 ppm or greater
- 28.10.5.2 Personnel are conducting air monitoring for H₂S and the concentration is unknown
- 28.10.5.3 When opening a system or bleeding down a system (for example, vessels, lines, scrubbers, etc.) and the concentration of H₂S in the work-area atmosphere is at or suspected to be at 10 ppm or greater

28.10.6 The ZARNAS COMPANIES hydrogen sulfide exposure limit determined to be IDLH is 100 ppm.

28.10.7 ZARNAS COMPANIES requires respiratory protection as described above, for entry into potential IDLH atmospheres, 100 ppm or greater. In addition, a second person is needed as a standby with an SCBA and rescue equipment in a safe area.

28.10.8 If manual tank gauging is performed to check automatic gauges or when gauge hatches will be opened for any reason and potential exposures are greater than or equal to 100 ppm, a second person (standby) is needed. The standby with a SCBA must be located in a safe area.

28.11 TRAINING

28.11.1 Employees who work in areas where the potential for exposure to H₂S at 10 ppm or greater, must be informed of the hazards of H₂S exposure, symptoms of overexposure, use of respiratory protection equipment and special precautions to minimize exposure and will be trained in the hazards associated with H₂S and the use of personal protective equipment.

28.11.2 Trained employees will:

- 28.11.2.1 Demonstrate knowledge of the hazards of H₂S
- 28.11.2.2 Comply with the provisions of this and other applicable procedures
- 28.11.2.3 Properly use and maintain personal protective equipment
- 28.11.2.4 Demonstrate knowledge of site specific operations/contingency plan procedures, if applicable

28.11.3 Employees whose job requirements may put them at worksites with potential concentrations of H₂S in excess of 10 ppm will have annual training in subjects including, but not limited to, the following:

- 28.11.3.1 The hazards, characteristics, properties and sources of H₂S
- 28.11.3.2 Danger in relying on sense of smell - individuals may not be able to smell an odor after an extended period of exposure to it, because they become accustomed to the odor
- 28.11.3.3 Specific locations where H₂S monitors and respiratory protective equipment are required, locations of H₂S detectors and alarms
- 28.11.3.4 Proper use of H₂S detection methods and monitoring equipment
- 28.11.3.5 Effects of H₂S on equipment (metal fatigue)

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- 28.11.3.6 Symptoms of overexposure to H₂S and first aid for H₂S overexposure
- 28.11.3.7 Emergency medical procedures as outlined in the facility contingency plan
- 28.11.3.8 Proper use of and maintenance of respiratory and eye protection equipment
- 28.11.3.9 Safe work and rescue procedures to minimize exposure and protect employees from an H₂S emergency
- 28.11.3.10 Wind direction awareness and safe routes of egress
- 28.11.3.11 Job hazards
- 28.11.3.12 Confined and enclosed space entry procedures (where applicable)
- 28.11.3.13 Right to access medical and exposure records, SDSs and the chemical inventory
- 28.11.4 Training will be on an ongoing basis and be conducted by qualified personnel. Periodic drills on the use of the respirators and rescue of workers should be included as part of the training program.
- 28.11.5 Refresher training will be provided as follows:
 - 28.11.5.1 As required by applicable regulations or process safety standard
 - 28.11.5.2 As needed when identified by: verification, inspections, incidents or audits
- 28.11.6 Training records, such as training rosters and an outline of the training curriculum, will be maintained on all H₂S training at each facility.



ILLUMINATION

29.1 PURPOSE

29.1.1 The purpose of this policy is to provide guidelines to assist ZARNAS COMPANIES management in ensuring that proper and adequate lighting exists on ZARNAS COMPANIES facilities and on jobsites.

29.2 RESPONSIBILITIES

29.2.1 Supervisors

29.2.1.1 Implement of ZARNAS COMPANIES' safety policy on illumination

29.2.1.2 Identify areas with inadequate or improper illumination through their facility and jobsite audits and communicate with safety director

29.2.2 Employee

29.2.2.1 Comply with all applicable guidelines contained in this safety policy

29.2.2.2 Immediately report unsafe conditions to a supervisor

29.2.3 Safety director

29.2.3.1 Assist supervisors and employees as applicable on any matter concerning this policy

29.2.3.2 Provide required training

29.2.3.3 Provide technical guidance on illumination problems in the workplace

29.3 GENERAL

29.3.1 Lighting or lack of lighting can contribute to accidents and to visual strain.

29.3.2 Employees, visitors and the public need to see what they are doing and where they are going.

29.3.3 ZARNAS COMPANIES facilities and construction sites will be properly and adequately lighted to minimize accidents. Where poor lighting exists or there is inadequate lighting for the job tasks, ZARNAS COMPANIES will provide sufficient lighting. These measures will be implemented to minimize those hazards to ensure the safety of employees and the public.

29.3.4 Illumination is measured in foot-candles. The illumination meter is a convenient piece of equipment that measures illumination of any specified location. This instrument is useful in quantifying ZARNAS COMPANIES's facility lighting deficiencies.

29.4 LIGHT SOURCES

29.4.1 Light sources are daylight and artificial light. The types of artificial light in ZARNAS COMPANIES include:



- 29.4.1.1 Incandescent
- 29.4.1.2 Fluorescent
- 29.4.1.3 High intensity discharge (mercury and sodium vapor)

29.4.2 Each type of artificial light provides a different spectrum of wavelengths and are used in ZARNAS COMPANIES based on lighting needs.

29.4.3 Lighting is also classified as general or supplemental. General lighting provides lighting to a large area. A form of supplementary lighting is task lighting. Task lighting provides additional targeted lighting for a particular task or activity.

29.5 HAZARDS

29.5.1 Illumination levels can either be too little or too much light. If there is too little light, employees or the public cannot see well. This could result in an error occurring because a dangerous situation may not be recognized with a corresponding decrease in an individual's reaction time.

29.5.2 Extremely bright light can injure receptor cells in the eye. Extremely bright light can cause afterimages that can obscure an individual's visual field until their receptor cells can recover. (The afterimage from a camera flashbulb or similar bright light is a common example.) Until an individual can recover from a bright light, the bright light may interfere with one's ability to detect an object.

29.5.3 Changes in illumination levels interfere with the ability of the eye to adjust quickly enough to permit seeing without error. Examples of changing light levels are the transition from bright outdoor light to dark interiors or from a bright area of a building to a dark one. Another example is looking at a brightly lighted task, then moving the eye to a location that is darker.

29.5.4 Glare is the presence of a bright light in the visual field. Direct glare occurs when light in the visual field is a source light. (Ex. headlights of an oncoming car at night.) Reflected glare occurs when a bright light reflects from a surface. Glare can lead to errors in perception and detection that result in accidents and may produce afterimages or delay visibility due to adaptation.

29.5.5 Luminous contrast refers to the changing light levels of an environment. For example, one may look at work on a desk that has a certain illumination. Shifting the eyes to a wall presents a much darker or lighter level of illumination. When there is too much difference between the two surfaces, the eyes have difficulty adapting, which may lead to visual errors.

29.6 ILLUMINATION FOR NIGHTTIME CONSTRUCTION

29.6.1 Tower lights consist of mercury vapor, metal halide, high pressure sodium or low pressure sodium fixtures mounted on a tower approximately 30 feet in height. The lights should be aimed and positioned to illuminate the area for construction work with no disabling glare to the motorist.

29.6.2 Machine lights are mercury vapor, metal halide, high pressure sodium or low pressure sodium. They are typically conventional roadway enclosed fixtures mounted on supports attached to the construction machine at a height of approximately 13 feet above ground. Machine lights are installed in addition to conventional automotive type head lights.



29.6.3 Nighttime construction lighting must meet all the specifications, provide adequate lighting for the construction work being performed, and sufficiently identify the work zone to motorists. Nighttime illumination must be approved by the resident engineer.

29.7 RECOMMENDED ILLUMINATION LEVELS

Area of Operation	Foot-candles (min)
General construction area lighting	10
General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling and field maintenance areas	3
Indoors: warehouses, corridors, hallways and exit ways	20
Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot candles is required at tunnel and shaft heading during drilling, mucking and scaling. Bureau Mines approved cap lights will be acceptable for use in the tunnel heading)	5
General construction plant and shops (ex. batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, barracks or living quarters, locker or dressing rooms, mess halls and indoor toilets and workrooms)	30
First Aid stations, infirmaries, and offices	100
Working with very small sized objects	200
Working with very small sized objects over a prolonged period	200-500
Performance of very prolonged and exacting tasks	500-1000

29.8 TRAINING

29.8.1 Employees will be trained to recognize improper and inadequate lighting at the jobsites.

29.8.2 Employees will be trained at the time of their initial employment or assignment.

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IN PLANT RAIL SAFETY

30.1 PURPOSE

30.1.1 The purpose of this policy is to ensure ZARNAS COMPANIES employees and contractors are aware of hazards and controls associated with working on or near rails or tracks at an owner facility.

30.2 GENERAL SAFETY RULES

30.2.1 Safe railroad operations involve a significant number of rules, safe work procedures and employee training. Railroad operations are inherently dangerous due to the sheer size of railroad equipment and the fact that there is often an abundance of equipment operating simultaneously.

30.2.2 No work will be performed with 6 feet of a rail way unless the proper work permit has been issued and employees have completed and documented the proper training.

30.2.3 Never position any part of your body in any pinch point as rail equipment can move at any time.

30.2.4 Never attempt to crawl under rail equipment or climb over moving rail equipment.

30.2.5 Never cross in front of moving rail equipment.

30.2.6 In all cases pedestrian employees will only cross rail ways at designated areas.

30.2.7 Vehicle crossings are not to be used as pedestrian crossings unless so indicated and there are no other pedestrian crossings in the area.

30.2.8 If no designated pedestrian crossing exists the following safety rules will be enforced:

30.2.8.1 Do not cross within 10 feet of the end of a parked rail car.

30.2.8.2 Do not cross between uncoupled rail cars.

30.2.8.3 Stop, look and listen prior to proceeding across the tracks.

30.2.8.4 Never step on any rails as they may be slippery.

30.3 PROCEDURE

30.3.1 Obtain permission to work in advance.

30.3.2 Prior to performing work within 6 feet of any railroad track, permission must be obtained from the owner client railroad supervisor or designated person to take the track out of service. If required, complete a client work permit prior to beginning work.

30.3.3 Approved safety equipment must be worn in designated areas associated with rails.

30.3.4 Never attempt to crawl under rail equipment or climb over moving rail equipment or attempt to cross in front of moving equipment.

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30.3.5 Never position any part of the body in a potential pinch point. Rail equipment can move in either direction at any time with no warning.

30.4 PARKING AND WALKING AROUND TRACKS

30.4.1 No vehicle or equipment should be parked within 8 feet of the center of the tracks. This assures that moving rail equipment will not strike other equipment.

30.4.2 Never walk inside the rails. Employees should walk at least 10 feet from the outside of the rail.

30.4.3 Approved hard hats, approved metatarsal boots and approved safety glasses with permanently attached side shields will be worn in designated areas.

30.5 CROSSING RAILROAD TRACKS

30.5.1 Pedestrians/employees will cross at existing designated pedestrian rail crossings where provided. Vehicle crossings are not intended as pedestrian crossings unless they are so identified or located and no other pedestrian crossings exist in the area.

30.5.2 If a designated rail crossing is not available, the following general safety procedures for crossing railroad tracks will be followed:

30.5.2.1 Do not cross within 10 feet of the end of a parked rail car.

30.5.2.2 Do not cross between uncoupled cars.

30.5.2.3 Stop, look and listen prior to proceeding across the tracks.

30.5.2.4 Never step on rails, as they may be slippery.

30.5.3 Pedestrians, vehicles and equipment should cross railroad tracks only at designated crossings.

30.5.4 Crossing is not permitted when lights and bells are activated and there is railcar movement in sight.

30.5.5 There may be a worker positioned at the front end of the train to watch for pedestrians or other equipment that may be in the direction of travel. This can be the locomotive operator if they has a clear view of the rails ahead. It may also be a brakeman or switchman who is in radio contact with the locomotive operator. If the locomotive is operated by a radio controlled remote, then the remote operator must be at the front of the train, watching in the direction of travel.

30.6 WORK ON OR NEAR TRACKS

30.6.1 Prior to performing work within 6 feet of any railroad track, permission must be obtained from railroad supervisor or designated person to take the track out of service.

30.6.2 Some form of positive track protection should be utilized when any type of maintenance or repair is being performed on or near railroad tracks. Positive protection and warning devices may need to be placed on both sides of the work area if rail equipment can travel both ways.



- 30.6.2.1 This could be in the form of a derailer placed in front of the work area or a switch that has been diverted and locked out.
- 30.6.2.2 A warning device (ex. blue flag or light) should be placed in front of the worksite.
- 30.6.2.3 Never attempt to crawl under rail equipment or climb over moving rail equipment or attempt to cross in front of moving equipment.

30.7 WORK BETWEEN THE RAILS

- 30.7.1 Many injuries and fatalities that have occurred in plant rail yards have occurred when employees positioned themselves between the rails. Never position any part of the body in a potential pinch point. Rail equipment can move in either direction at any time.
- 30.7.2 When coupling or uncoupling, it is safer to work with one foot outside the rails whenever possible. Workers should avoid kicking couplers when they stick, since this activity increases the likelihood of falling between the rails.

30.8 RAILCAR SPOTTING

- 30.8.1 Spotting of railroad cars is usually done by switch engine crews. If it is necessary for the employees to move a railroad car, the supervisor will consider the following factors:
 - 30.8.1.1 Facilities or equipment available to move the car
 - 30.8.1.2 Distance the car must be moved
 - 30.8.1.3 Number of cars to be moved
 - 30.8.1.4 Condition of track and ground transfer
 - 30.8.1.5 Railway clearances
- 30.8.2 After weighing the above factors, the supervisor will decide whether to use power equipment, move the car by hand or take material to or from the car as is. If at all possible, power equipment will be used to move any car.
- 30.8.3 If a car must be moved without power equipment, a car mover (which should be operated by only one person) can be used. If two workers move a car, each will have a car mover and should alternately walk opposite wheels. All hand-activated car movers will be equipped with knuckle guards. A stationary car puller, if available, will be used.
- 30.8.4 When a car is being spotted or moved, the following will be performed:
 - 30.8.4.1 Check to ensure no one is working in the car or in adjacent cars.
 - 30.8.4.2 Remove all bridge plates or dock boards.

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- 30.8.4.3 Move only one car at a time with hand equipment. If winches are used, do not overload them. The winch hook should be placed in the eye provided on the frame beneath the car. Do not hook to steps, ladders, or grab irons.
- 30.8.4.4 Utilize chocks and brakes to make sure the car will not continue to roll after it has been relocated. A worker should be on the car ready to apply the brakes as necessary.
- 30.8.4.5 Pay attention to proper warning signs, proper clearance from obstructions, and housekeeping along the tracks. Do not store anything within 10 feet of a rail. Permits must be obtained prior to any work within 6 feet of track.

30.9 MOVING RAILCARS

- 30.9.1 Obtain proper permits while working within 6 feet of track
- 30.9.2 Never use a pinch bar or crow bar.
- 30.9.3 Never try to stop a car with a piece of lumber or metal on the track.
- 30.9.4 Never move cars down an incline or sloping track unless absolutely necessary and then use restraints to do so safely.
- 30.9.5 Never leave a car mover in place under wheels. A car mover under pressure will fly out when a train crew moves the car.
- 30.9.6 If heavy equipment is used to push or pull a car, it should have a railroad car coupler as an attachment. If a cable attachment is used, a worker will be available to set the rail car brakes. All employees and pedestrians will use only designated crossings. If designated crossings are not available a spotter must be in place and have communications with engine operator. Employees will never cross in front of train or crawl under rail equipment. Employees will be aware of pinch and crush points.

30.10 UNLOADING RAILCARS

- 30.10.1 Employees must wear PPE at all times.
- 30.10.2 Employees will receive training for all associated hazards and documented this will include crush and pinch points.
- 30.10.3 Positive protection must be provided against movement while dock boards or bridge plates are in position.
- 30.10.4 Derails or bumper blocks will be installed to prevent spotted cars from being struck by a free rolling car.
- 30.10.5 To protect against a car attached to a locomotive, derails or bumper blocks will be placed on the track or else a blue ball sign, flag, light or disc will be placed near the track and hand brakes or wheel stops will be used to prevent car movement.

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- 30.10.6 Powered industrial trucks must not be used to open or close car doors. If difficulty is encountered, a door puller will be used.
- 30.10.7 The railroad car flooring must be checked for breaks and weakness before it is driven on.
- 30.10.8 Where steel bands or wires are used in boxcars or trucks, all workers will wear eye protection in accordance with PPE.
- 30.10.9 When opening doors of boxcars, all persons will be alert to avoid having fingers caught or freight falling out. A bar, ratchet hoist or puller will be used. Trucks will not be used or car doors will not be pried open. Damaged doors may fall from runners.
- 30.10.10 Metal transfer plates will be securely anchored with bolts, gangplanks and skids securely placed before using. Operators of mechanized equipment will avoid bumping doors or door posts.
- 30.10.11 Metal bands will be removed or cut to avoid dangling ends. Special equipment such as loading bars will be stacked in ends of car when empty and the car doors will be closed and latched before the car is moved.
- 30.10.12 Specially equipped cars with movable bulkheads have instructions in the car that will be followed. When bulkhead partitions are difficult to move, the rollers will be examined to determine the reason for binding.
- 30.10.13 Railroad cars are heavy, as are some freight loads; therefore, use of proper equipment is mandatory, such as chocks, restraints and adequate signs. All employees will wear safety glasses, hard hat, gloves, safety shoes and reflective vest.
- 30.10.14 Employees will cross at only designated crossings.
- 30.10.15 A spotter will be utilized and have direct contact with engine operator.
- 30.10.16 Employees will not cross in front of train or crawl underneath while in motion this is prohibited.

30.11 RIDING ON RAILCARS

- 30.11.1 Companies that permit riding on railcars require that workers board or de-board the car only when the train is stopped.
- 30.11.2 Four points of contact should be maintained while riding and one should never ride on the side or end sills or the couplers.

30.12 PERSONAL PROTECTIVE EQUIPMENT

30.12.1 ANSI approved PPE required when working within 6 feet of a rail way will be:

- 30.12.1.1 Hard hats
- 30.12.1.2 Gloves
- 30.12.1.3 Safety glasses with permanently attached side shields

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30.12.1.4 High visibility clothing

30.12.1.5 Safety toe work boots

30.13 TRAINING

30.13.1 Appropriate training based on complexity of the job and potential hazards related to in plant rail hazards will be provided to all applicable employees.

30.13.2 There will be a knowledge assessment used to verify the effectiveness of the training and that employees have the appropriate knowledge to work in the rail areas safely and to determine if employees have demonstrated skills to safely perform their work assignments.

30.13.3 All training will be conducted and documented in advance of working on or near in plant rails.

30.13.4 Retraining will be provided to any employee who demonstrates a lack of proficiency with the materials presented and for unsatisfactory/unsafe performance of job assignments.

30.13.5 Training will be provided by a competent person prior to the beginning of any work near a rail way. The training documentation will include at a minimum:

30.13.5.1 Name of the competent trainer and contact information

30.13.5.2 Outline of the materials presented

30.13.5.3 Sign in sheet of all employees attending the training

30.13.5.4 Location and date of the training class

30.13.5.5 Knowledge assessment tool

30.13.6 Upon any injury/incident or safety violation employees will be retrained.



INCIDENT REPORTING AND INVESTIGATING

31.1 PURPOSE

31.1.1 The purpose of this policy is to establish procedures for incident reporting and investigation. While all incidents should be investigated, the extent of such investigation will reflect the seriousness of the incident utilizing a root cause analysis process or other similar method.

31.2 GENERAL PROVISIONS

31.2.1 Reporting and investigation of all incidents, both with and without injury or property damage and near misses, will lead to identification of root causes, uncover contributing accident causes and help to:

31.2.1.1 Reduce economic losses from injuries and lost production time.

31.2.1.2 Help employees develop an awareness of workplace problems and hazards.

31.2.1.3 Identify areas for process improvement to increase safety and productivity.

31.2.1.4 Note areas where training information or methods need improvement.

31.2.2 The goal of the incident investigation is the prevention of future accidents by using knowledge derived from the investigation. Incident investigations must result in corrective actions. The investigation will also be used to prepare reports required by federal and state laws as well as the workmen's compensation carrier.

31.2.3 All incidents including, but not limited to, equipment damage and/or process failures, near misses, environmental spills or releases, occupational injuries, illnesses, and fatalities or security issues will be reported immediately and in accordance with ZARNAS COMPANIES crisis management plan and/or quality performance expectations. Failure to report an incident, injury or illness may result in disciplinary action against the employee and/or onsite supervisory personnel, up to and including termination of employment.

31.2.4 Reporting of an incident must occur in a specified manner and the reporting sequence must be posted and followed accordingly. For example, in the event of an incident, the following are contacted in order: 911, supervisor, company physician, security, human resources, safety director and other organizations as required. ZARNAS COMPANIES will verbally report required incidents to OSHA within 8 hours of their discovery. Incidents will also be reported to ZARNAS COMPANIES customer as soon as possible or in a timely manner (within 24 hours of incident).

31.2.5 ZARNAS COMPANIES will comply with OSHA requirements of reporting work related incidents resulting in the death of an employee or the hospitalization of three or more employees. It is required that all incidents are reported to our customers including, but not limited to, injuries, spills, property damage, fires, explosions and vehicle damage.

31.2.6 Responsibilities for handling reporting and investigations will be established and assigned to individuals prior to incidents.

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- 31.2.7 To ensure a proper and accurate investigation certain equipment will be made available and may include some or all of the following items: writing equipment, such as pens and paper, measurement equipment, such as tape measures and rulers, cameras, small tools, audio recorder, PPE and marking devices, such as flags, equipment manuals, etc.
- 31.2.8 A ZARNAS COMPANIES manager will complete and submit all relevant reports and forms subject to management review and concurrence.
- 31.2.9 All work activities in the area where the incident occurred will be suspended until the incident has been reviewed with all affected personnel, appropriate corrective actions have been identified and implemented and the site has been determined to be safe for the resumption of work. Incident sites will be preserved until an appropriate investigation is completed.
- 31.2.10 All failed/contributing components will be preserved and remain in ZARNAS COMPANIES custody until released by senior management and/or ZARNAS COMPANIES insurers, agents and underwriters.
- 31.2.11 Injury assessment and treatment/stabilization of the injured person(s) is the first priority in incident response. During injury assessment and treatment/stabilization, transportation arrangements should also be made. After notifying the appropriate ZARNAS COMPANIES operations manager of the incident and logistics arrangements, an ZARNAS COMPANIES supervisor personnel or a designated person will escort and accompany the injured person(s) to the medical treatment facility and remain with the injured employee until:
 - 31.2.11.1 Employee has been treated and released (at which time the employee will be escorted to the ZARNAS COMPANIES operations facility).
 - 31.2.11.2 The employee has been admitted.
 - 31.2.11.3 A ZARNAS COMPANIES rep relieves the escort.
 - 31.2.11.4 A family member or friend has arrived to pick up the employee.

31.3 INCIDENT INVESTIGATION

- 31.3.1 All incidents will be appropriately investigated in a timely manner.
- 31.3.2 Investigations will be conducted by the project manager and supervisors. The safety director may participate in the investigation and preparation of the final report. All investigations will be dedicated solely to fact finding. All individuals will be identified for the role they played in the events leading up to the incident. Information gathered will be accurate, factual, complete and unbiased.
- 31.3.3 Initial identification of evidence immediately following the incident should include a listing of people, equipment and materials involved and a recording of environmental factors such as weather, illumination, temperature, noise, ventilation, etc.
- 31.3.4 Evidence such as people, positions of equipment, parts and papers must be preserved, secured and collected through notes, photographs, witness statements, flagging and impoundment of documents and equipment.

INCIDENT REPORTING AND INVESTIGATING

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31.3.5 Witness interviews and statements must be collected. Consider the following:

31.3.5.1 Locating witnesses

31.3.5.2 Ensuring unbiased testimony

31.3.5.3 Securing appropriate interview locations

31.3.5.4 Interviewers will be trained in proper techniques to conduct an effective interview

31.3.5.5 Follow-up interviews will be provided for as required

31.3.6 All investigations will be documented, to include the following elements:

31.3.6.1 Drawings, sketches, points of reference and/or measurements

31.3.6.2 Photographs of worksite and/or relevant elements of the incident

31.3.6.3 Witness information and written statements

31.3.6.4 Root cause, contributing factors, corrective action measures

31.3.7 Make recommendations for corrective action:

31.3.7.1 Responsibilities must be assigned (investigators, management, technical personnel) for completion of the action plan.

31.3.7.2 Record in the investigation report.

31.3.7.3 Recommendations will focus on the corrective action to contributing factors identified.

31.3.7.4 Recommendations will specify what, why and how corrective actions are completed.

31.3.8 Ensure recommendations/lessons learned are acted upon:

31.3.8.1 Assign responsibility for the follow-up of the corrective action(s).

31.3.8.2 Record on action plan section of the investigation report.

31.3.8.3 Detail what has been done, who completed the actions and when completed.

31.3.8.4 Ensure the recommendations are communicated to employees and implemented to prevent recurrence or similar events.

31.3.9 Written incident reports must be documented on the ZARNAS COMPANIES incident report form and include a detailed narrative statement concerning the events.

31.4 PROCEDURE

31.4.1 ZARNAS COMPANIES requires all fatalities, injuries, near misses and illnesses to be reported to supervision in a timely manner and as per the injury/illness reporting procedure. Once an injury or illness is reported then a decision will be made, per OSHA guidance, to determine if the injury or illness is work related.

INCIDENT REPORTING AND INVESTIGATING

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- 31.4.2 ZARNAS COMPANIES provides 365 day availability to first aid treatment. For non-office location we provide an onsite medical first responder.
- 31.4.3 First notification of injury or illness must be made to the direct supervisor prior to reporting to the dispensary/clinic. Serious cases should be reported directly to the dispensary/clinic.
- 31.4.4 For any injury requiring the services of a physician or medical facility, employees will be referred to a local medical facility. The listing of designated physicians and medical facilities will be posted on the employee bulletin board located on ZARNAS COMPANIES office trailer.
- 31.4.5 Failure to immediately report injuries or illnesses will result in progressive disciplinary actions. Intentional planning to avoid company provided medical attention by waiting to seek outside physician will also receive progressive disciplinary action. No medical treatment will be authorized for any job related injury or illness, which was not reported in the prescribed manner except in the case of an emergency.
- 31.4.6 Per incident investigation procedure all personnel must be prepared to provide a clear description of the injury or illness. Written statements may also be required.
- 31.4.7 ZARNAS COMPANIES reserves the right to require personnel seeking medical attention for a work-related incident to be examined by a company physician.
- 31.4.8 Employees receiving medical attention for a work related incident will be required to submit to a drug screen test conducted by ZARNAS COMPANIES
- 31.4.9 All incidents will be investigated per the company's incident reporting and investigation procedures.
- 31.4.10 Written records of all injuries and illnesses will be maintained by the safety department. In addition, all work related, fatalities, injuries or illnesses will be recorded per OSHA guidance which includes: work-related cases, a new case or meets one or more of the general (OSHA) recording criteria.
- 31.4.11 The safety director will record all work related illnesses/injuries on the *OSHA 300 Log and Incident Report* or equivalent within seven calendar days of receiving information that the incident occurred.
- 31.4.12 At the end of each calendar year the OSHA information will be verified. Following this verification and finalization of the OSHA required document ZARNAS COMPANIES company executives must certify, by signature, that they have examined the *OSHA 300 Log* and that they reasonably believe, based on their knowledge of the process by which the information was recorded, that the annual summary is correct and complete.
- 31.4.13 After the company executives certify the annual OSHA recording is correct a copy of the OSHA 300A summary must be posted in each establishment in a conspicuous place or places where notices to employees are customarily posted. This annual summary may not be altered, defaced or covered by other material.
- 31.4.14 At a minimum the annual OSHA summary must be posted no later than February 1st of the year following the year covered by the records and the posting kept in place until April 30th.

INCIDENT REPORTING AND INVESTIGATING

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31.4.15 For purposes of records retention the OSHA 300 log, the privacy case list (if one exists), the annual summary and the OSHA 301 Incident Report forms must be retained, on file, for five years following the end of the calendar year that these records cover.

31.5 TRAINING

31.5.1 Training requirements relative to incident investigation and reporting will include awareness, first responder and investigation. Training must be completed upon being hired or after a promotion into a supervisory position.

31.5.2 Personnel will receive training with regards to their roles and responsibilities for incident response and incident investigation techniques.

31.5.3 Employees who could be first responders will be trained and qualified in first aid techniques to control the degree of loss during the immediate post incident phase.

INJURY/ILLNESS RECORDKEEPING

Revision Date: 05/2015



INJURY/ILLNESS RECORDKEEPING

32.1 PURPOSE

32.1.1 The purpose of this policy is to acknowledge the importance of an effective recordkeeping program for recognizing, identifying and reviewing trends and deficiencies. ZARNAS COMPANIES recognizes the importance of recordkeeping in tracking the performance of duties and responsibilities for employees, under the program. ZARNAS COMPANIES is committed to implementing and maintaining an active, up-to-date, recordkeeping program.

32.2 RESPONSIBILITIES

32.2.1 Supervisor

32.2.1.1 Ensure job related injuries and illness are reported promptly to the safety director

32.2.2 Employee

32.2.2.1 Promptly report any actual or suspected job related injury or illness

32.2.3 Safety director

32.2.3.1 Ensure all job related injuries and illness are recorded properly in accordance with OSHA requirements

32.2.3.2 Ensure required posting are conducted in accordance with recordkeeping guidelines

32.2.3.3 Maintain all required records

32.2.3.4 Determine proper classification of job related injuries or illnesses based on OSHA recordkeeping guidelines

32.3 RECORDKEEPING

32.3.1 ZARNAS COMPANIES is required to keep records of fatalities, injuries and illnesses must record each fatality, injury and illness that:

32.3.1.1 Is work related

32.3.1.2 Is a new case

32.3.1.3 Meets one or more of the general recording criteria

32.3.2 Employees and in some cases, members of the public, have the right to review certain safety documents upon request. All requests by employees, contractors, regulatory agencies or members of the public who want to view safety documents that are not commonly available to employees should be directed to the safety director.

32.3.3 Personnel files will include only job related information pertinent to employment.

INJURY/ILLNESS RECORDKEEPING

Revision Date: 05/2015



- 32.3.4 Personnel files are open only to authorized company personnel on a business related, need to know basis unless the company is legally required to release them by court order or subpoena.
- 32.3.5 Employees must give written permission before there will be external disclosure of their personal information with the exception of the following information:
 - 32.3.5.1 Verification of dates of employment and positions held.
 - 32.3.5.2 Personal information which the company is legally required to reveal by court order or subpoena. In the latter case, the employee will be informed before the disclosure if reasonably possible.
- 32.3.6 The program administrator will ensure the maintenance of all safety program records, for the listed periods, including:

New Employee Safety Orientation forms	length of employment
<i>Code of Safe Practices Receipt</i>	length of employment
Disciplinary actions for safety	1 year
Safety inspections	2 years
Safety meeting reports	2 years
<i>Safety Contact Reports</i>	2 years
Accident Investigations	5 years
Federal or state OSHA log of injuries	5 years
Inventory of Hazardous Materials (if any)	forever
Employee exposure or medical records	forever

- 32.3.7 Confidential documents are stored in a locked file cabinet. Access to confidential documents will be restricted to personnel with a need to know. The project manager will determine who has a need to know. Confidential and non-confidential documents will be maintained in separate files. All records are available for review at the corporate office.
- 32.3.8 The recordkeeping system used may be electronic and/or paper based.
- 32.3.9 ZARNAS COMPANIES management will be notified if recordkeeping is not in accordance with company policy. If required documentation is not available, then the management will initiate follow up action to ensure that specific safety activities are being effectively carried out and adequately documented by responsible and accountable employees.

32.4 INJURY RECORDS

- 32.4.1 Employee reports of injuries and illnesses are taken seriously by ZARNAS COMPANIES Our reporting system ensures that the safety director receives the report. The safety director examines existing reporting policies and practices to encourage and not discourage reporting.
- 32.4.2 Recordable injury and illnesses must be entered on an *OSHA 300 Log* and *301 Incident Report* within seven calendar days of receiving information that a recordable injury.
- 32.4.3 ZARNAS COMPANIES does not discriminate against employees who file a work related injury or illness or any other safety and health complaint.

INJURY/ILLNESS RECORDKEEPING

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- 32.4.4 A company executive must certify that they have examined the *OSHA 300 Log* and that they reasonably believes based on his or her knowledge of the process by which the information was recorded, that the annual summary is correct and complete.
- 32.4.5 A copy of the annual summary is posted in the break room where employee notices ordinarily posted. The posted annual summary must not be altered, defaced or covered by other material.
- 32.4.6 The annual summary must be posted no later than February 1st of the year following the year covered by the records and the posting kept in place until April 30th.
- 32.4.7 Insurance and *Workers' Compensation* forms that have been filed are kept at corporate office.
- 32.4.8 The *OSHA 300 Log* and the *OSHA 301 Incident Report* forms must be retained for 5 years following the end of the calendar year that these records cover.

32.5 INSPECTION REPORTS

- 32.5.1 All equipment, facilities and vehicle inspection reports will be maintained on file. Only inspection forms approved by the ZARNAS COMPANIES management will be used. ZARNAS COMPANIES also reserves the right to alter, change and/or modify inspection reports to best suit their needs. Supervisors are ultimately responsible for ensuring workers turn in inspection reports, with noted corrective action taken in a timely fashion.

32.6 SAFETY MEETINGS

- 32.6.1 A file of safety meetings held, will be maintained by the safety director. When safety meetings are used as or in conjunction with training activities, it will be noted on the safety meeting form. The individual employee conducting the safety meeting, is responsible for providing a copy of the safety meeting to the safety director for record maintenance.

32.7 INCIDENT INVESTIGATION REPORTS

- 32.7.1 Incident investigation reports will be maintained by the safety director so as to ensure all incident investigation reports are turned in for each reported incident. The safety director will maintain a file of all accident investigation reports. Incident investigations will be conducted to document facts and findings of incidents as well as determine the root cause so preventative measures can be taken.

32.8 DRUG AND ALCOHOL TESTING RESULTS

- 32.8.1 Drug and alcohol testing results, both positive and negative, are confidential and will be stored in a locked filing cabinet. Representatives of the HR department, the safety director and the project

32.9 MEDICAL AND EXPOSURE RECORDS

- 32.9.1 Employee medical and exposure records will be preserved for at least thirty years past the termination date of the employee with whom they are associated. The records may be preserved at a company facility or at the facility of a third party medical care provider. If records are preserved at a third party facility, the facility must be notified in writing that the company expects the records to be maintained indefinitely and that no records should be destroyed or transferred without the consent of the company.

INJURY/ILLNESS RECORDKEEPING

Revision Date: 05/2015



32.9.2 Employees and their designated representatives will be allowed access to employee exposure and medical records as per OSHA 29 CFR 1926.33 and 1910.1020 and at no cost to the employee or the employee's representative. Personal identifiers, such as name, address and social security numbers will be removed from the medical and exposure records before access is given. Employees are to be notified of this policy upon initial assignment and annually thereafter.

32.10 TRAINING RECORDS

32.10.1 A file of all training sessions, verbal and written, will be maintained by the safety director. Annual safety training requirements will be monitored by the safety director.

32.10.2 All training requirements by OSHA and other regulatory agencies are considered base minimum guidelines. These training requirements will be conducted in accordance to time requirements. Regulatory recordkeeping requirements will be followed.

32.10.3 Specialized training, where necessary, concerning specific equipment, programs or procedures will be conducted and documented in accordance with the proper regulatory guidelines.

32.10.4 A record will be maintained by the safety director to ensure new hire safety orientations are conducted. The safety director is responsible for conducting new employee safety orientation.

JOB COMPETENCY/FIT FOR DUTY

Revision Date: 07/2018



JOB COMPETENCY/FIT FOR DUTY

33.1 PURPOSE

33.1.1 The purpose of this policy is to ensure workers can demonstrate the skills, aptitudes and performance levels as they are related to their specific job or position with the company. The purpose of this policy is to ensure that employees are able to perform their jobs without hazard to themselves or coworkers.

33.2 RESPONSIBILITIES

33.2.1 Employee

33.2.1.1 Manage health in such a way to safely perform essential job functions, with or without reasonable accommodation.

33.2.1.2 Notify their supervisors when they are not fit for duty.

33.2.1.3 Notify supervisor when they observe a coworker acting in a manner that indicates the coworker may be unfit for duty.

33.2.2 Supervisor

33.2.2.1 Determine essential procedures and processes for each position.

33.2.2.2 Observe attendance, performance and behavior of the employees.

33.2.2.3 Ensure process is conducted efficiently and responsibly for each worker annually.

33.2.2.4 Follow policy procedures when presented with circumstances or knowledge that indicate that an employee may be unfit for duty.

33.3 ORGANIZATIONAL CHART

33.3.1 ZARNAS COMPANIES established an organizational chart that establishes chain of command and organizational structure. It helps establish supervisory roles within the company.

33.3.2 Every job title will be displayed on the organizational chart and will have a written job description that will be designed for the particular role.

33.4 JOB DESCRIPTION

33.4.1 Each position within ZARNAS COMPANIES will be assigned a formal job description. This job description will be beneficial by defining and communicating job expectations to future employees, as well as current employees. They can also prove to be beneficial by having a clear definition of an employee's essential tasks which can be matched with performance standards. These performance standards can later be evaluated to review worker performance.

33.4.2 Job descriptions will focus on six steps to give a clear definition of what the job entails and requires. Documentation must be acquired from worker as proof that they are qualified to perform their duties.

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- 33.4.2.1 A job title will be chosen to accurately reflect the duties of the job and will give indication of the level of hierarchy that the position will fit.
- 33.4.2.2 A summary of the overall job description.
- 33.4.2.3 Job tasks, responsibilities and authorities - Explains what major tasks the employee will do. The list of task will consist of observable tasks that are listed in order starting with the most important task. The tasks will be assigned an estimated percentage of the amount of time the worker will spend on that particular task.
- 33.4.2.4 Each job will have specified minimum qualification requirements to be able to perform the tasks. These qualifications may include education, work experience and abilities.
- 33.4.2.5 Supervision - Indicate how the position will be supervised.
- 33.4.2.6 Working conditions - Gives workers an idea of normal working hours, overtime, workspace, condition of equipment they will be using, working environment and special circumstances.

33.5 QUALIFICATION VERIFICATION

- 33.5.1 Upon choosing workers for a particular job their credentials must meet or exceed the requirements set by the job description. Documentation must be acquired to ensure that the worker is qualified prior to being chosen for the job.
- 33.5.2 Workers will be required to provide a diploma, transcript or other form of documentation to prove completion of minimum education requirements.
- 33.5.3 The applicant's résumé will be reviewed to assess if the minimum amount of experience has been obtained. Previous employers may be contacted to verify this information.
- 33.5.4 The validation process should emphasize worker's ability to demonstrate areas of competence that are of central importance to fulfill their role and to perform their job at the required level.
- 33.5.5 The validation process itself can be accomplished through supervisory observation or questioning, peer review, or formal assessment from internal or external qualified sources.
- 33.5.6 Employees requiring improvement to reach a fully competent level of performance should be identified. A specific plan of action and timetable should be documented and implemented to assure the proper level of competence is achieved.

33.6 COMPETENCY

- 33.6.1 This program will aim to evaluate the employee's competence for their position from the very beginning of the employment cycle and throughout their employment. By following these procedures to ensure that our workers are competent in their jobs it will both benefit the company and the employees by increasing productivity and safety.
- 33.6.2 Whenever a worker is new to the company or new to a position for less than six months they will be designated as a short service employee (SSE). SSEs will be required to work with and be supervised by a mentor. The mentor will be an experienced, competent employee. Mentors will be responsible for

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providing on-the-job training and overseeing their work to ensure the worker is performing their work safely and adequately. The mentor/supervisor (competent person) must verify that an employee is competent to perform their roles and responsibilities before being allowed to work independently.

- 33.6.3 ZARNAS COMPANIES views competence and development of new competencies, as an evolving process. Competence should be evaluated on an ongoing basis, particularly as our needs undergo continuous change. An employee's competencies are essentially the fundamental and requisite skills they need to prepare them for adequate performance of their job.
- 33.6.4 It is the policy of ZARNAS COMPANIES to develop an initial competency assessment for each new employee upon hire or transfer, and to conduct a formal competency assessment annually. An employee's competence should be assessed ongoing annually as a basis for evaluating the employee's application of competencies to performance of their job. An annual competency assessment is used as a basis for conducting an evaluation of the individual's performance. Employee competency will be verified prior to employee starting specific task.
- 33.6.5 Job specific training must be provided for new or transferred employees. All employees must be trained on the tasks they perform on a regular basis.
- 33.6.6 Workers will be periodically be given performance evaluations to determine ongoing competency in their job tasks and to determine if workers are meeting expectations required within their job descriptions. This will help to determine if the worker is competent for their current position or may be beneficial in a higher position. Performance evaluations may also indicate that the preliminary steps to assure job competence may not have been accurate and skills may need to be improved.
- 33.6.7 The purpose of the competency assessment is to validate performance appraisal with specific documentation of skills and abilities required for competent performance of the job. Department policies and procedures may be included among the competencies required for the job. For certain jobs, tasks and procedures outlined in the job description can be used for the purpose of assessing an individual's competence.

33.7 PROCEDURE

- 33.7.1 Competence to perform a job is assessed upon hire using the following sources: licensure, school records, work history, reference checks, practical tests, skills checklist and personal interviews by the supervisor to determine the new hire has qualifications to meet minimum job requirements.
- 33.7.2 A new hire initial competency assessment will be completed for each worker as part of their department orientation and the assessment will be maintained. The same process is used for employees who transfer to new jobs. Frequently qualified new employees need to develop their skills in certain areas to become fully competent overall. The employee will work with their supervisor or manager to achieve the required level of competence in these identified areas.
- 33.7.3 The department manager will assure that all the required competencies have been satisfactorily completed within one year of employment and thereafter on an annual basis. After the first year competence will be validated via a formal competency assessment which will be completed for each employee annually and maintained in department files. Managers will provide opportunities for employees to improve their skills in required areas through in-service training, outside seminars and conferences via allocated resources such as tuition reimbursement, mentoring, etc.

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- 33.7.4 Validators must directly observe any procedure they are evaluating and assure it is being followed according to company procedure. It is the validator's responsibility to be certain of the worker's competence for each procedure they are validating.
- 33.7.5 Validators are accountable for competency validation once they sign off on a competence.
- 33.7.6 Department heads will review the specific competencies for each position at least every two years to ensure that they are updated and applicable.
- 33.7.7 For certain positions, a worker's job description (criteria based) will describe the specific abilities required for the job. In these cases, the tasks and procedures outlined in the worker job description can be used to assess competence and a separate competency assessment form is not needed.
- 33.7.8 As a minimum qualification requirement ZARNAS COMPANIES workers will undergo company task specific training for industrial painters. Qualification requirements will include, blasting, airless spray, fall protection, confined space, hazardous materials, lead, scaffold and rigging.
- 33.7.9 Prior to commencement of work employee documentation will be obtained from their local union verifying they meet the qualifications of their job.

33.8 FIT FOR DUTY

- 33.8.1 Employees are expected to perform their jobs in a safe and appropriate manner, at all times, free from the adverse effects of physical, mental, emotional and personal problems.
- 33.8.2 Employees who are not fit for duty may present a safety hazard to themselves, to other employees, to ZARNAS COMPANIES or to the public. Being fit to work ensures employees are able to perform their jobs without hazard to themselves or coworkers in a safe, secure, productive and effective manner and remain able to do so through the entire time they are working.
- 33.8.3 To ensure employees are physically capable of performing their job function, pre-employment physicals may be included in the hiring process or when changing to job functions and different environments. The fit for duty evaluation may include testing for chemical (ex. alcohol and drug) levels, referral for psychiatric evaluation or any other evaluation or follow up deemed necessary.
- 33.8.4 Procedures for drug and alcohol testing for pre-employment, post-accident or random as prescribed by the owner operator will be implemented.
 - 33.8.4.1 If workers are not able to perform their job or are taking any medication that might affect ability to do the job, workers must inform a supervisor immediately.
- 33.8.5 Supervisors are responsible for monitoring the attendance, performance and behavior of their employees and take appropriate actions to prevent loss and follow procedures of this policy when presented with circumstances or knowledge that indicate that an employee may be unfit for duty.
- 33.8.6 If a supervisor believes a worker is not fit to perform their duties, they may be sent home, relieved of certain duties, assigned to different duties, assigned to light duty or asked for an explanation. They may request a fit for duty exam and have HR refer the worker to a healthcare provider.

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- 33.8.7 When worker performance and/or behavior (including the odor of alcohol or possible use of any illegal substance) appears to be unsafe, ineffective and/or inappropriate, it is the supervisor's responsibility to challenge worker behavior and ability to function, remove worker from the jobsite, refer worker for a fit for duty exam immediately and conduct appropriate follow up.
 - 33.8.7.1 Due to the safety issues involved, supervisors have a special responsibility to implement this policy in a consistent and fair manner.
 - 33.8.7.2 The supervisor must document the reasons for the fit for duty request by recording the employee's behavior and noting names of any witnesses who observed that behavior. Documentation must be submitted to HR by the next business day.
- 33.8.8 Medical personnel will advise HR if the employee is fit or not fit for duty. The medical results of the fit for duty exam will be communicated to HR.
 - 33.8.8.1 If medical personnel determines the employee is fit for duty, employee must contact HR on the next general business day. The supervisor, in consultation with HR, will determine discipline in situations where misconduct may have occurred.
 - 33.8.8.2 If medical personnel determines the employee is *NOT* fit for duty, the supervisor makes every effort to arrange for safe transportation home for the employee. Employee must contact HR on the next business day. The supervisor, in consultation with HR, will determine discipline in situations where misconduct has occurred.
 - 33.8.8.3 If worker is not able to perform some duties but can perform others, an attempt will be made to reasonably accommodate restricted activities. A written request for reasonable accommodation must be provided to the supervisor and HR.
- 33.8.9 Dependent upon the reason for the fit for duty exam, workers who violate this policy a second time may be subject to progressive discipline, up to and including termination of employment.
- 33.8.10 Workers must manage health in such a way to safely perform their essential job functions, with or without reasonable accommodation and notify supervisor when not fit for duty. Employees must take responsibility for their own safety and not report to work in a condition that will endanger safety.
- 33.8.11 Workers must report fatigue and lack of mental acuity to their supervisor and notify supervisor if a coworker is observed acting in a manner that indicates the coworker may be unfit for duty.
- 33.8.12 Employees must report all medications they are taking. Over the counter medications such as allergy or cold and flu medications could also impair one's ability to perform safely and must also be reported to their supervisor.
 - 33.8.12.1 Employees will not chronically use over-the-counter or prescription drugs to increase mental alertness. Employees are discouraged from taking any substance known to increase fatigue, including fatigue that sets in after the effects of the drug wear off.
- 33.8.13 Disciplinary action may occur for an employee reporting to work in a condition which could endanger their safety or the safety of any other person.

JOB COMPETENCY/FIT FOR DUTY

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33.8.14 If there is any change to medical condition, workers must inform their supervisor accordingly. If a worker remains unable to return to work, even on a temporary basis, they must call in at least weekly to report medical status and update contact information as appropriate.

33.8.15 If workers face restrictions that result in a permanent inability to perform essential functions of the job, the Americans with Disabilities Act (ADA) and applicable laws will be applied to determine suitability for employment.

33.9 RECORDKEEPING

33.9.1 Employee right to privacy is acknowledged. ZARNAS COMPANIES will not provide any material or information obtained in relation to fit for duty exams to any person who does not have a lawful purpose for requiring the material or information.

33.9.2 ZARNAS COMPANIES will maintain all written records: incident details, incident investigation records, injured employee and if necessary and available, worker medical records.

33.10 TRAINING

33.10.1 The worker will receive training has been given the position they will go through training. ZARNAS COMPANIES will ensure that the employee will receive training specific to their assigned task. The worker will have someone train them on their particular job tasks. The trainer will be someone who is deemed competent by the company and is familiar with the position and job tasks that they are training. This will ensure that workers are familiar with their job duties and have been trained in how to properly perform those duties.

33.10.2 ZARNAS COMPANIES will provide initial and annual training on recognizing fatigue and other signs of being unfit to work.

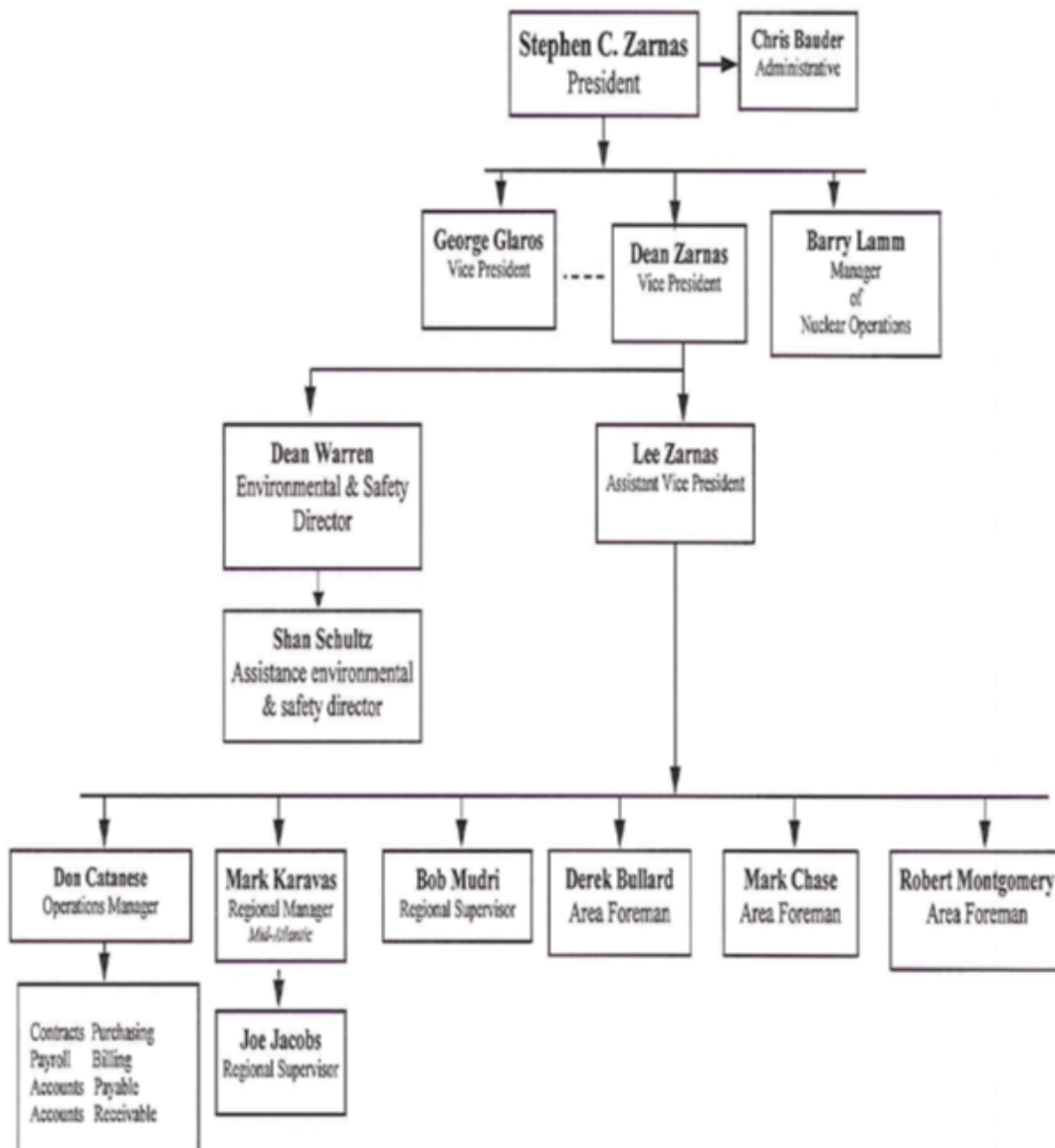
33.10.3 Employees may be trained on the policy via safety meetings, reviewing the policy as part of the new employee orientation or posting the policy in a conspicuous location.

33.10.4 If training is required for regulatory compliance the workers will be trained as per those regulations.


33.10.5 Training will be taught by a qualified instructor and all training will be documented.



G.C. Zarnas & Co, Corporate Organizational Chart

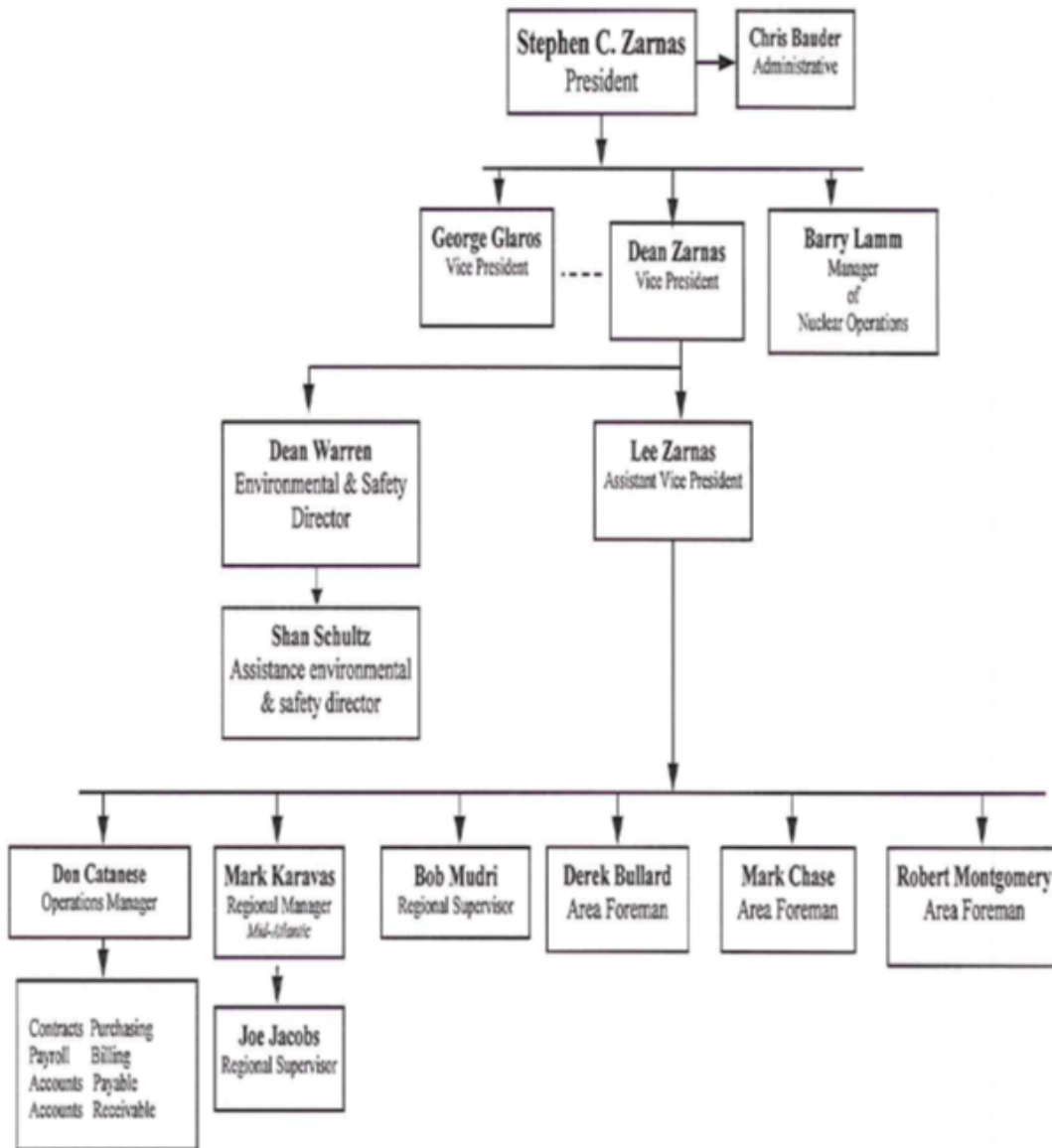


President



Stephen C. Zarnas

G.C. Zarnas & Co, Corporate Organizational Chart



President 
Stephen C. Zarnas

LADDER SAFETY

Revision Date: 05/2015



LADDER SAFETY

34.1 PURPOSE

34.1.1 The purpose of this policy is to describe methods and practices for care and use of stairways and ladders that can be read and understood by all supervisors and employees at ZARNAS COMPANIES. This policy establishes guidelines to be followed whenever an employee works with ladders or stairways.

34.2 RESPONSIBILITIES

34.2.1 The safety director is solely responsible for the program and has full authority to make necessary decisions to ensure its success. The safety director is authorized to amend these instructions.

34.2.2 Employees have the authority to halt any operation at the jobsite where there is danger of serious personal injury.

34.3 WRITTEN PROGRAM

34.3.1 This written policy is intended to create an awareness of the hazards, standardize procedures for use and care of the equipment, provide consistent format to train employees on the proper procedures to be used, minimize the possibility of injury or harm to our employees and demonstrate ZARNAS COMPANIES compliance with OSHA stairway and ladder requirements.

34.3.2 ZARNAS COMPANIES will review and evaluate this standard practice on an annual basis, when changes occur to the governing regulatory standards or when facility operational changes occur that require a revision of this policy. Effective implementation requires a written program for job safety that is endorsed and advocated by management and that outlines our goals and plans. This written program will be communicated to all employees.

34.4 GENERAL REQUIREMENTS

34.4.1 All facilities and equipment owned by ZARNAS COMPANIES will be maintained in a safe manner. Certain work conditions may contain a reasonable probability of injury that can be prevented by proper maintenance and supervision. No employee will knowingly be subjected to a hazardous condition without all possible protective measures being implemented.

34.4.2 Do not stand on the top two rungs of a step ladder.

34.4.3 Always face the ladder when ascending or descending.

34.4.4 Do not carry objects that could cause injury in the event of a fall.

34.4.5 Ladders will be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder. (The distance along the ladder between the foot and the top support.)

34.4.6 Ladders will not be loaded beyond the maximum intended load for which they were built or beyond the manufacturer's rated capacity.

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34.4.7 Painter's stepladders longer than 12 feet will not be used.

34.4.8 A mason's ladder is defined as a special type of single ladder intended for use in heavy construction work. Mason's ladders longer than 40 feet will not be used.

34.5 FIBERGLASS AND WOODEN LADDERS

34.5.1 Ladders will be maintained in good condition at all times, the joint between the steps and side rails will be tight, all hardware and fittings securely attached, and the movable parts will operate freely without binding or undue play.

34.5.2 Metal bearings of locks, wheels, pulleys, etc., will be frequently lubricated.

34.5.3 Frayed or badly worn rope will be replaced.

34.5.4 Safety feet and other auxiliary equipment will be in good condition to ensure proper performance.

34.5.5 All fiberglass/wooden parts will be free from sharp edges and splinters; sound and free from accepted visual inspection from shake, wane, compression failures, decay or other irregularities.

34.5.6 Ladders will be visually inspected frequently and those which have developed defects will be withdrawn from service for repair or destruction and tagged or marked as *Dangerous - Do Not Use*.

34.5.7 Rungs should be kept free of grease and oil.

34.5.8 Portable rung and cleat ladders will, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the top support). The ladder will be so placed as to prevent slipping or it will be lashed or held in position. Ladders will not be used in a horizontal position as platforms, runways or scaffolds.

34.5.9 Ladders for which dimensions are specified should not be used by more than one person at a time or with ladder jacks and scaffold planks where use by more than one person is anticipated. In such cases, specially designed ladders with larger dimensions of the parts should be procured.

34.5.10 Portable ladders will be placed so side rails have secure footing. The top rest for portable rung and cleat ladders will be reasonably rigid and will have ample strength to support the applied load.

34.5.11 Do not place ladders in front of doors unless door is blocked, locked or guarded.

34.5.12 Ladders will not be placed on boxes, barrels, or other unstable bases to obtain additional height.

34.5.13 Ladders with broken or missing steps, rungs or cleats, broken side rails or other faulty equipment will not be used, ladders having any of these conditions present will be destroyed and disposed of. Improvised repairs will not be made.

34.5.14 Short ladders will not be spliced together to provide long sections.

34.5.15 Ladders made by fastening cleats across a single rail will not be used.

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34.5.16 Ladders will not be used as guys, braces, or skids or for other than their intended purposes.

34.5.17 Tops of ordinary stepladders will not be used as steps.

34.5.18 No ladder should be used to gain access to a roof or elevated work area unless the top of the ladder is extended at least 3 feet above the point of support.

34.5.19 On two-section extension ladders the minimum overlap will be as follows:

SIZE OF LADDER (FEET)	OVERLAP (FEET)
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

34.5.20 Portable rung ladders with reinforced rails will only be used with metal reinforcement on the underside.

34.5.21 All portable rung ladders will be equipped with nonslip bases when there is a hazard of slipping. Nonslip bases are not intended as a substitute for care in safely placing, lashing or holding a ladder that is being used upon oily, metal, concrete or slippery surfaces.

34.5.21.1 Ladder rungs, cleats, and steps will be parallel, level and uniformly spaced, when the ladder is in position for use.

34.5.22 Bracing on back legs of step ladders is designed for increasing stability and not for climbing.

34.5.23 Step spacing must not be more than 12 inches. Steps will be parallel and level when the ladder is in position for use.

34.5.24 Minimum width between side rails at the top, inside to inside, must not be less than 11½ inches. From top to bottom, side rails must spread at least 1 inch for each foot of length of stepladder.

34.5.25 A metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in open positions must be properly maintained for each stepladder. The spreader must have all sharp points covered or removed to protect the user.

34.6 PORTABLE STEPLADDERS

34.6.1 Stepladders longer than 20 feet will not be used by this facility. Stepladders of one of the following types specified will be used:

34.6.1.1 Type I--Industrial stepladder, 3 to 20 feet for heavy duty, such as utilities, contractors, and industrial use.

34.6.1.2 Type II--Commercial stepladder, 3 to 12 feet for medium duty, such as painters, offices, and light industrial use.

34.7 PORTABLE RUNG LADDERS

34.7.1 Single ladder longer than 30 feet will not be used by this facility.

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- 34.7.2 Two-section extension ladders longer than 60 feet will not be used by this facility.
- 34.7.3 Trestle and extension trestle ladder. Trestle ladders, or extension sections or base sections of extension trestle ladders longer than 20 feet will not be used.

34.8 JOB MADE LADDERS

- 34.8.1 A *job made ladder* is a ladder fabricated by employees, typically at the construction site and is not commercially manufactured. This definition does not apply to any individual rung/step ladders.
- 34.8.2 These ladders are temporary, and are used only until a particular phase of work is completed or until permanent stairways or fixed ladders are installed.
- 34.8.3 A job made wooden ladder will not serve as a work platform.
- 34.8.4 Wood ladders will not be coated with any opaque covering, except for identification or warning labels, which may be placed on one face only of a side rail.
- 34.8.5 All components will be surfaced so as to prevent injury to an employee from punctures or lacerations and to prevent snagging of clothing.
- 34.8.6 Job made fixed ladders
 - 34.8.6.1 Must be able to support at least two loads of 250 lbs. each, concentrated between any two consecutive attachments.
 - 34.8.6.2 Rungs, cleats and steps will be able to support a single concentrated load of at least 250 lbs.
 - 34.8.6.3 Rungs, cleats and steps will be parallel, level and between 10 and 14 inches apart.
 - 34.8.6.4 The distance between rungs, cleats, and steps, and any obstruction behind the ladder will be at least 7 inches.
 - 34.8.6.5 The distance between the center line of rungs, cleats, and steps and any obstruction on the climbing side of the ladder will be at least 30 inches.
 - 34.8.6.6 The distance between sides will be 16 inches.
 - 34.8.6.7 If the total climb is 24 feet or greater, one of the following will be used:
 - 34.8.6.7.1 Ladder safety device
 - 34.8.6.7.2 Self-retracting lifeline with rest platforms at intervals not exceeding 150 feet
 - 34.8.6.7.3 Cage or well with multiple ladder sections not exceeding 50 feet
- 34.8.7 If ladder safety device is used
 - 34.8.7.1 Will be capable of withstanding a drop test consisting of an 18 inches. drop of a 500 lb. weight.

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- 34.8.7.2 Will permit the employee to ascend or descend without continually having to hold, push or pull any part of the device.
- 34.8.7.3 Will be activated within two feet after a fall occurs, limiting the descending velocity of the employee to 7 feet/second or less.
- 34.8.7.4 Connection between the carrier/lifeline and the point of attachment on the employee will be no more than 9 inches in length.
- 34.8.8 If cages are used
 - 34.8.8.1 Will extend a minimum of 27 inches and maximum of 30 inches from the centerline of the step or rung.
 - 34.8.8.2 Will be a minimum of 27 inches in width.
 - 34.8.8.3 Top will extend a minimum of 42 inches above the top of a landing, unless other acceptable protection is provided.
 - 34.8.8.4 Bottom will extend to a point not less than 7 feet or more than 8 feet above the base of the ladder. The bottom will be flared a minimum of four inches all around.
 - 34.8.8.5 Horizontal bands will be fastened to the side rails of ladder, or directly to the structure, building or equipment if using individual-rung ladders.
 - 34.8.8.6 Vertical bands will be spaced at intervals not more than 9½ inches on center horizontally.
 - 34.8.8.7 Inside of the cage will be clear of projections.
- 34.8.9 If wells are used
 - 34.8.9.1 Will completely encircle the ladder.
 - 34.8.9.2 Will be free of projections.
 - 34.8.9.3 Inside face on the climbing side of the ladder will extend a minimum of 27 inches and maximum of 30 inches from the centerline of the step or rung.
 - 34.8.9.4 Inside clear width will be a minimum of 30 inches.
 - 34.8.9.5 Bottom of the well on the access side will start at a point not less than 7 feet or more than 8 feet above the base of the ladder.
- 34.8.10 Job made portable ladders
 - 34.8.10.1 Must be capable of supporting at least four times the maximum intended load.
 - 34.8.10.2 Rungs, cleats and steps will be parallel, level and between 10 and 14 inches apart.
 - 34.8.10.3 Rungs will be shaped so that an employee's foot cannot slide off the ends.

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34.8.10.4 The distance between sides will be 11½ inches.

34.8.11 Side rails

34.8.11.1 Use construction-grade lumber for all components.

34.8.11.2 Side rails of single-cleat ladders up to 24 feet long should be made with at least 2 inches x 6 inches nominal stock lumber.

34.8.11.3 Side rails should be continuous, unless splices are the same strength as a continuous rail of equal length.

34.8.11.4 The width of single-rung ladders should be at least 16 inches but not more than 20 inches between rails measured inside to inside.

34.8.11.5 Rails should extend above the top landing between 36 inches and 42 inches to provide a handhold for mounting and dismounting and cleats must be eliminated above the landing level.

34.8.11.6 Side rails of ladders which could contact energized electrical equipment should be made using nonconductive material. Keep ladders free of any slippery materials.

34.8.11.7 Only put ladders on a stable and level surface that is not slippery.

34.8.12 Cleats

34.8.12.1 Cleats should be equally spaced 12 inches on center from the top of one cleat to the top of the next cleat.

34.8.12.2 Cleats should be fastened to each rail with three 12d common wire nails which are nailed directly onto the smaller surfaces of the side rails.

34.8.12.3 Making cuts in the side rails to receive the cleats is not advisable.

34.8.12.4 Cleats should be at least 1 inches x 4 inches for ladders 16 feet to 24 feet in length.

34.8.13 Filler block

34.8.13.1 Filler should be 2 inches x 2 inches wood strips.

34.8.13.2 Insert filler between cleats.

34.8.13.3 Nail filler at bottom of each side rail first. Nail ends of a cleat to each side rail with three 12d common nails. One nail is placed 1- ½ inch in from each end of the filler block.

34.8.13.4 Nail the next two fillers and cleat, and then repeat. The ladder is complete when filler is nailed at the top of each rail.

34.8.13.5 Make all side rails, rungs and fillers before the ladder is assembled.

34.8.14 Secure ladder base so that it does not move.

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- 34.8.15 Smooth the wood surface of the ladder to reduce injuries to workers from punctures or lacerations and to prevent snagging of clothing.
- 34.8.16 Use job made wooden ladders with spliced side rails at an angle so that the horizontal distance from the top support to the foot of the ladder is one-eighth the working length of the ladder.
- 34.8.17 Ensure that job made wooden ladders can support at least four times the maximum intended load.
- 34.8.18 Only use ladders for the purpose for which they were designed.
- 34.8.19 Only put ladders on stable and level surfaces unless secured to prevent accidental movement.
- 34.8.20 Ensure that the worker faces the ladder when climbing up and down.
- 34.8.21 Maintain a 3 point contact (two hands and a foot or two feet and a hand) when climbing a ladder.
- 34.8.22 Keep ladders free of any slippery materials.
- 34.8.23 Maintain good housekeeping in the areas around the top and bottom of ladders.
- 34.8.24 Do not paint a ladder with nontransparent coatings.
- 34.8.25 Do not carry any object or load that could cause the worker to lose balance and fall.
- 34.8.26 Do not subject a job made wooden ladder to excessive loads or impact tests.

34.9 METAL LADDERS

- 34.9.1 Ladders must be maintained in good usable condition at all times.
- 34.9.2 If a ladder is involved in any of the following, immediate inspection is necessary:
 - 34.9.2.1 If ladder tips over, inspect side rails for dents, bends or dented rungs. Check all rung-to-side-rail connections; check hardware connections; check rivets for shear.
 - 34.9.2.2 If ladders are exposed to oil and grease, equipment should be cleaned of oil, grease, or slippery materials. This can easily be done with a solvent or steam cleaning.
- 34.9.3 Ladders having defects are to be marked and taken out of service until repaired by either maintenance department or the manufacturer.
- 34.9.4 A simple rule for setting up a ladder at the proper angle is to place the base a distance from the vertical wall equal to one-fourth the working length of the ladder.
- 34.9.5 Portable ladders are designed as a one-man working ladder based on a 200 pound load.
- 34.9.6 The ladder base section must be placed with a secure footing.
- 34.9.7 The top of the ladder must be placed with the two rails supported, unless equipped with a single support attachment.

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- 34.9.8 When ascending or descending, the climber must face the ladder.
- 34.9.9 Ladders must not be tied or fastened together to provide longer sections. They must be equipped with the hardware fittings necessary if the manufacturer endorses extended uses.
- 34.9.10 Ladders should not be used as a brace, skid, guy or gin pole, gangway or for other uses than that for which they were intended, unless specifically recommended for use by the manufacturer.
- 34.9.11 Metal ladders will not be used when work is performed on or near electric circuits.
- 34.9.12 This facility will purchase only ladders without structural defects or potential accident hazards such as sharp edges, burrs, etc. that meet industrial grade specifications.
- 34.9.13 All procurement and disposal of ladders will be performed through or with the knowledge of the safety director. Ladders will be destroyed beyond use prior to disposal to prevent further use. Procurement of ladders will be based on the type of work anticipated to be performed and in accordance with this standard practice instruction and applicable OSHA regulations.

34.10 TRAINING

- 34.10.1 ZARNAS COMPANIES will provide training for each employee using ladders and stairways, as necessary. The program will enable each employee to recognize hazards related to ladders and stairways and train each employee in the procedures to be followed to minimize these hazards.
- 34.10.2 ZARNAS COMPANIES will ensure that each employee has been trained by a competent person in the following areas, as applicable:
 - 34.10.2.1 Nature of fall hazards at the jobsite
 - 34.10.2.2 Correct procedures for erecting, maintaining and disassembling the fall protection systems to be used
 - 34.10.2.3 Proper construction, use, placement and care in handling of all stairways and ladders
 - 34.10.2.4 Maximum intended load carrying capacities of ladders used
 - 34.10.2.5 Standards of this policy
- 34.10.3 Retraining will be provided for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with this section.

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35.1 PURPOSE

35.1.1 The purpose of this policy is to protect workers from the adverse effects of lead exposure and to maintain compliance with OSHA 1926.62.

35.2 RESPONSIBILITIES

35.2.1 Safety director

35.2.1.1 Provide notification and technical assistance in the implementation of this procedure

35.2.1.2 Maintain all records and documentation under this policy

35.2.2 Project manager

35.2.2.1 Responsible for identifying potential employee exposures to lead

35.2.2.2 Develop standard operating procedures to comply with written program

35.2.2.3 Responsible for implementing the elements of the lead control program and holds authority to institute appropriate changes to ensure employee protection

35.2.2.4 Schedule air monitoring with safety director

35.2.2.5 Schedule employees for necessary medical testing

35.2.2.6 Ensure proper use of protective equipment by employees and monitor its effectiveness

35.2.2.7 Ensure the availability and proper use of hygiene facilities

35.2.2.8 Inform safety director of employee health concerns with potential exposures to lead

35.2.3 Employee

35.2.3.1 Responsible for complying with procedures established by supervisor to minimize potential lead exposure

35.2.3.2 Inform supervisor if they have health concerns that may be pertinent to lead exposure

35.3 COMPETENT PERSON

35.3.1 Whenever the potential exists for lead exposure in a workplace, regardless of the extent of exposure, the supervisor must designate a *lead competent person*, herein after referred to as the Lead CP. The Lead CP must be designated, in writing, by name and title. It is essential that a Lead CP be designated for each work shift.

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- 35.3.2 The Lead CP will be responsible for enforcement of this lead program on each shift. The Lead CP must be at least a member of line management assigned to the specific project and must have local certification as required.
- 35.3.3 In order to comply with OSHA's definition of a *competent person* under the lead standard, the individual designated must be capable of identifying existing and predictable lead hazards in the workplace and have authority to take prompt corrective measures to eliminate such hazards.
- 35.3.4 This individual will have full responsibility for implementation and adherence to all of the provisions of this program. This will include responsibility for identifying lead hazards and implementing corrective action. The Lead CP's duties will also include, as a minimum, at least the following:
 - 35.3.4.1 Determine, wherever possible prior to the performance of the job, whether or not lead is present within the worksite.
 - 35.3.4.2 Ensure the adequacy of all employee lead monitoring data and lead exposure assessments.
 - 35.3.4.3 Ensure that all employees with a potential exposure to lead are wearing the required protective work clothing and proper personal protective equipment are adequately trained in the correct use of this equipment, and are maintaining appropriate exposure control methods.
 - 35.3.4.4 Ensure that adequate and proper hygiene facilities are provided, that employees are properly trained in the use of those facilities, and that employees are using those facilities as required.
 - 35.3.4.5 Ensure that engineering controls are adequately designed, effectively operated, and maintained properly.
 - 35.3.4.6 Ensure that the work areas in which a potential for lead exposure exists, are adequately and properly controlled.
 - 35.3.4.7 Conduct frequent (at least daily) inspections of the work area to ensure that all of the corrective measures necessary to decrease the risk potential for lead exposure are properly implemented, correctly maintained and appropriately effective. Comprehensive notes of these inspections must be recorded in a separate file or log and any deficiencies noted must be immediately corrected and reported to the project supervisor and the environmental project manager.

35.4 GENERAL SAFETY

- 35.4.1 If ZARNAS COMPANIES employees become aware of any potential exposure to lead, they are to immediately stop work and notify a supervisor. The supervisor is then responsible to inform the office for further information, but not allow work to proceed until the exposure has been abated. This also applies to multi-contractor worksites where ZARNAS COMPANIES personnel are exposed to lead due to inadequate procedures.
- 35.4.2 All contractors working on multi-employer worksites will be notified of the potential for exposure.

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- 35.4.3 This policy applies to all construction work where an individual may be occupationally exposed to lead. Construction work includes alteration and repair including painting and decorating, demolition or salvage of structures where lead or materials containing lead are present, removal or encapsulation of materials containing lead, new construction, alteration, repair or renovation of structures, substrates, that contain lead, installation of products containing lead, lead contamination/emergency cleanup and transportation, disposal, storage or containment of lead or materials containing lead.
- 35.4.4 If, based on initial hazard assessment, ZARNAS COMPANIES has any reason to anticipate employee exposure to lead, an exposure assessment will be conducted. Any painted surface suspected to contain lead is tested prior to performing any work on the surface. All planned work activities and materials will be evaluated with the safety director for the presence of lead.
- 35.4.5 To determine the presence of lead and the potential for exposure, an initial hazard assessment will be conducted by the competent person. The following techniques will be used to detect the presence of lead in the work environment.
 - 35.4.5.1 A test sample containing five or six ½" x ½" paint chips should be scraped from the suspected area.
 - 35.4.5.2 Four or five different samples should be obtained to be considered a representative sample of the project.
 - 35.4.5.3 The samples should be individually labeled with the following information:
 - 35.4.5.3.1 Job name and/or identifications number
 - 35.4.5.3.2 Samples collection date
 - 35.4.5.3.3 Location sample obtained from
- 35.4.6 The samples are sent to a certified, accredited laboratory for analysis.

35.5 HEALTH HAZARDS

- 35.5.1 The dangers of lead come from breathing in too much lead dust or fumes. There is also a risk of swallowing lead if an employee touches food, cigarettes, cosmetics, etc., when hands are contaminated by lead.
- 35.5.2 Acute lead poisoning symptoms include loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint/muscle aches and anemia.
- 35.5.3 Most of the effects take time to show up. When lead enters the body, it gets into the bloodstream and from there into organs and body tissues. If the body takes in more lead than it can naturally eliminate, the lead builds up and, over time, can cause severe and irreversible damage to the blood forming, nervous, urinary and reproductive systems.
- 35.5.4 Chronic overexposure to lead can cause much more serious problems that rarely show symptoms until it is too late to reverse them. A very large dose of lead can have almost immediate effects. It can cause seizures, coma and in a matter of days, death.



35.6 EXPOSURE LIMITS AND MONITORING

- 35.6.1 The permissible exposure limit (PEL) for lead is 50 ug/m³ averaged over an 8 hour period. The action level for lead is 30 ug/m³ averaged over an 8 hour period.
- 35.6.2 ZARNAS COMPANIES will strive to assure that no employee is exposed to lead at concentrations greater than 50 ug/m³ of air averaged over an 8 hour period. Methods and the means to control this will be accomplished on a project-to-project basis, by engineering and/or administrative controls over personal (respiratory) protection and monitoring.
 - 35.6.2.1 If the initial determination or subsequent air monitoring reveals employee exposure to be at or above the action level but below the permissible exposure limit the employer will repeat air monitoring in accordance with this paragraph at least every 6 months. The employer will continue air monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee.
- 35.6.3 Initial monitoring may be limited to a representative sample of those employees exposed to the greatest concentrations of airborne lead. Representative exposure sampling is permitted when there are a number of employees performing the same job, with lead exposure of similar duration and level, under essentially the same conditions. For employees engaged in similar work, the standard requires that the members of the group reasonably expected to have the highest exposure levels be monitored. This result is then attributed to the other employees of the group.
- 35.6.4 ZARNAS COMPANIES will periodically review and revise this program to reflect the most recent exposure monitoring data available, but in no case will the time period exceed 12 months between reviews.
- 35.6.5 We provide our employees or their representatives the opportunity to observe exposure monitoring of toxic materials or harmful physical agents. Our procedure for allowing observation includes:
 - 35.6.5.1 Explaining the measurement procedure
 - 35.6.5.2 Allowing observation of all steps related to the measurement procedure
 - 35.6.5.3 Disseminating of the results when returned by the laboratory
 - 35.6.5.4 Providing an observer with proper personal protective devices
 - 35.6.5.5 Assuring that observers comply with all applicable safety and health procedures
- 35.6.6 Exposure monitoring will be conducted at the start of the operation to initially determine if any employee is exposed to lead at or above the action level. Full shift personal samples will be representative of regular, daily exposure to lead. Analysis of air monitoring results will be conducted by a certified lab.
- 35.6.7 Additional monitoring will be conducted whenever there has been a change of equipment, process, control, personnel or a new task has been initiated that may result in additional employee exposure or when an employee experiences symptoms that indicate overexposure to lead.



35.7 MEDICAL SURVEILLANCE AND REMOVAL PROGRAM

35.7.1 ZARNAS COMPANIES supports the practices necessary for early detection of lead exposure. The medical surveillance program supplements the primary goals of the lead exposure control program of preventing disease through elimination or reduction of airborne concentrations of lead and sources of ingestion. The medical surveillance provisions incorporate both initial and ongoing medical surveillance.

35.7.2 Medical surveillance, including biological monitoring, will be provided if and when an employee is exposed to airborne lead at or above the PEL for more than 30 days. Medical surveillance will include examinations and consultations.

35.7.2.1 Medical examinations and procedures will be performed by or under the supervision of a licensed physician.

35.7.2.2 Medical surveillance is provided at no cost to the employee.

35.7.3 ZARNAS COMPANIES will remove employees from work who have exposures to lead at or above action level each time a periodic and a follow up blood sample indicates blood lead levels are at or above 50 micrograms per deciliter of whole blood. We also remove employees who have exposures to lead at or above the action level when a healthcare professional determines that they have medical conditions which, when exposed to lead, places them at a greater risk.

35.7.3.1 Any employee with elevated blood levels should be temporarily removed. Sampling and monitoring should be performed monthly during removal period. Employees should be notified in writing within 5 days when lead levels are not acceptable. The standard requires temporary medical removal with medical removal protection benefits.

35.7.4 If the physician who is implementing ZARNAS COMPANIES's medical program makes a final written opinion recommending the employee's removal or other special protective measures, the employer must implement the physician's recommendation.

35.7.5 Employees that have been medically removed because of high blood lead level will have follow-up testing within two weeks after removal. Employees will not be permitted to return to work having an exposure at or above the action level until the employee's blood lead level is below 40 ug/dl and is released by the initial consulting physician.

35.7.6 Annual examinations will be conducted for each employee whose blood lead level tested at or above 40 ug/dl at any time in the previous 12 months. Complete confidentiality of other detected medical conditions unrelated to the employee's exposure to lead will be maintained.

35.7.7 ZARNAS COMPANIES will implement and act consistent with any special protective measures or limitations recommended by the consulting physician.

35.8 RECORDKEEPING

35.8.1 ZARNAS COMPANIES maintains employee exposure and medical records to document ongoing employee exposure, medical monitoring and medical removal of workers. This data provides a baseline to evaluate the employee's health properly.

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- 35.8.2 Employees or former employees, their designated representatives and OSHA must have access to exposure and medical records.
- 35.8.3 The exposure assessment records must include:
 - 35.8.3.1 Dates, number, duration, location and results of each sample, including a description of sampling procedure used to determine representative employee exposure
 - 35.8.3.2 Description of sampling and analytical methods used and evidence of their accuracy
 - 35.8.3.3 Type of respiratory protection worn, if any
 - 35.8.3.4 Name, social security number and job classification of the monitored employee and all others whose exposure the measurement represents
 - 35.8.3.5 Environmental variables that could affect the measurement of employee exposure
- 35.8.4 ZARNAS COMPANIES will maintain, for at least the duration of employment, an accurate record for each employee subject to medical removal, including:
 - 35.8.4.1 Name and social security number of the employee
 - 35.8.4.2 Date on each occasion that the employee was removed from current exposure to lead and the corresponding date which the employee was returned to former job status
 - 35.8.4.3 Brief explanation of how each removal was or is being accomplished
 - 35.8.4.4 Statement about each removal indicating whether the reason for removal was an elevated blood level
- 35.8.5 Exposure monitoring records include exposure assessment, medical surveillance results, medical removals, objective data for exemption from requirement for initial monitoring, procedures for making records available and procedures for transfer of records.

35.9 CONTROLS

- 35.9.1 This lead protection policy for this worksite is implemented when employee exposure exceeds the permissible exposure limit (PEL).
- 35.9.2 This program is our written strategy and schedule for protecting our workers from lead exposure. It incorporates all relevant information that relates to this goal, so that we determine whether we appropriately analyzed problems and solutions (including alternatives) relating to lead exposure.
- 35.9.3 This program is intended to reduce employee exposure to at or below the PEL. When all feasible engineering and work practice controls that can be instituted are not sufficient to reduce employee exposure to acceptable levels, appropriate respiratory protection will be provided to supplement such controls. Respiratory and any other necessary PPE will be provided to employees at no cost.
- 35.9.4 The jobsite, materials and equipment are regularly inspected.

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- 35.9.5 Ventilation is one common protection against overexposure to airborne lead. It may be provided by a mechanical system used with enclosures or in containment situations. Or, it may be a local portable ventilation system. Shrouded tools with ventilation are another option. OSHA requires that when ventilation is used to control exposure, employers must measure the ventilation system's effectiveness at least every three months.
- 35.9.6 In enclosed spaces, all surfaces coated with toxic preservatives will be stripped for a distance of at least four inches from the area of heat application.
- 35.9.7 Choose materials and chemicals that do not contain lead for construction projects.
- 35.9.8 To reduce lead exposure is to rotate jobs so that each individual has less exposure to lead. If this type of administrative control is used, employers must keep records documenting who is rotated, where and when.
- 35.9.9 Isolation consists of keeping employees not involved in the blasting operations as far away from the work area as possible, reducing the risk of exposure.
- 35.9.10 Reduce workers' exposure to lead and the likelihood that they will ingest lead.
- 35.9.11 Ensure that the exposure does not extend beyond the worksite.
- 35.9.12 The owner will establish regulated areas and post warning signs where exposures are in excess of the PEL. When airborne lead concentrations exceed the PEL, warning signs will be posted at all entry points into regulated areas and must read:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING
- 35.9.13 Caution tape will be used to restrict access as required.
- 35.9.14 Reduce the movement of lead from the worksite. Work clothing must not be worn away from the jobsite. Under no circumstances should lead contaminated work clothes be laundered at home or taken from the worksite, except to be laundered professionally or for disposal following applicable federal, state and local regulations.
- 35.9.15 ZARNAS COMPANIES reviews the program at least every six months to revise it as necessary. ZARNAS COMPANIES will ensure a copy of this written plan is available at this worksite.

35.10 PROTECTIVE CLOTHING AND EQUIPMENT

- 35.10.1 ZARNAS COMPANIES will provide workers who are exposed to lead above the PEL or for whom the possibility of skin or eye irritation exists with clean, dry protective work clothing and equipment that are appropriate for the hazard at no cost to employee.
- 35.10.2 Appropriate protective work clothing and equipment used on construction sites includes:
 - 35.10.2.1 Gloves, hats and shoes or disposable shoe coverlets

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- 35.10.2.2 Disposable coveralls and separate shoe covers may be used, if appropriate, to avoid the need for laundering
 - 35.10.2.3 Vented goggles or face shields with protective spectacles or goggles
 - 35.10.2.4 Welding or abrasive blasting helmets
 - 35.10.2.5 Respirators
- 35.10.3 Damaged or torn protective clothing will be promptly repaired or replaced.
- 35.10.4 At the end of the shift, employees must remove their contaminated work clothing according to these rules, shower and leave the work clothing in the change room. Clothing and personal clothing are to be stored in separate areas so they do not take lead dust home with them. Workers are not allowed to leave a worksite wearing lead contaminated clothing or equipment.
- 35.10.4.1 ZARNAS COMPANIES has contracted an industry specific cleaning service to launder reusable coveralls. They will be notified in writing of the presence of lead.
 - 35.10.4.2 Disposal or laundry containers must be labeled:
CAUTION: CLOTHING CONTAMINATED WITH LEAD. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE OR FEDERAL REGULATIONS.

35.11 RESPIRATORY PROTECTION

- 35.11.1 Respirators are required when ventilation, job rotation and other engineering and administrative controls are not enough to reduce lead exposure below the PEL and ZARNAS COMPANIES must provide them at no cost to workers.
- 35.11.2 Respirators will be used during periods when an employee's exposure to lead exceeds the PEL, including periods necessary to install or implement engineering or work practice controls and work operations for which engineering and work practice controls are insufficient to reduce employee exposures to or below the PEL.
- 35.11.3 ZARNAS COMPANIES also gives an employee the right to request a respirator even if lead levels are not high enough to require one.
- 35.11.4 ZARNAS COMPANIES must select the appropriate respirator from Table 1 of 29 CFR 1926.62(f)(3)(i) that will provide the employee adequate protection.
- 35.11.5 A half-mask air purifying respirator is required when performing tasks with the lowest levels of lead exposure above the PEL. These tasks include:
 - 35.11.5.1 Using a sledgehammer or similar tool to manually demolish walls or other building components coated with lead based paint
 - 35.11.5.2 Manual scraping and sanding of a surface with lead based paint
 - 35.11.5.3 Using a heat gun to melt lead paint on a surface prior to scraping

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- 35.11.5.4 General cleanup in lead containing areas
- 35.11.5.5 Removing dirt, scale or paint from structures with lead based paint using power tools with dust collection systems. Tools might include grinders, brushes or sanders
- 35.11.5.6 Spray painting
- 35.11.6 A powered air purifying respirator is the choice for tasks with the next highest levels of lead exposure. These include:
 - 35.11.6.1 Repainting, repairing or relining high pressure acid tanks lined with specialized tile or lead brick held in place with lead containing mortar or grout.
 - 35.11.6.2 Lead turning uses torch melting or fusing of lead or alloyed lead to another lead object.
 - 35.11.6.3 Removing dirt, scale, or paint from lead based painted structures with power tools that do not have dust collection systems.
 - 35.11.6.4 Cleaning up after blasting with dry expendable abrasives on structures with lead based paint.
 - 35.11.6.5 Moving or removing the enclosures within which abrasive blasting is performed. These enclosures usually have quite a bit of lead residue.
- 35.11.7 A supplied respirator is needed for the jobs that risk exposure to especially high levels of lead in the air. They include:
 - 35.11.7.1 Abrasive blasting with sand, steel grit, steel shot, aluminum oxide etc.
 - 35.11.7.2 Using an acetylene torch or arc welder to weld, cut or burn on steel structures whose coatings or paint contain lead.
- 35.11.8 Where daily airborne exposure to lead exceeds $50 \mu\text{g}/\text{m}^3$, affected workers must don respirators before entering the work area and should not remove them until they leave the high-exposure area or have completed a decontamination procedure.
- 35.11.9 ZARNAS COMPANIES will provide NIOSH certified powered, air-purifying respirators to employees when a respirator is required or equivalent which provides adequate protection. This information is included in our respiratory protection program.

35.12 HOUSEKEEPING

- 35.12.1 ZARNAS COMPANIES believes a proper housekeeping program is necessary where there is lead exposure or the potential of lead exposure to keep airborne lead levels below permissible limits. This requires a regular housekeeping schedule adapted to exposure conditions onsite.
- 35.12.2 If employees come in contact with lead containing materials, hands and faces should be washed immediately following exposure.

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35.12.3 ZARNAS COMPANIES will provide hygiene facilities for workers and assure they follow good hygiene practices. Showers, where feasible, will be provided as close as practical to the work area for employees exposed at or above the PEL.

35.12.3.1 Feasibility will be based on: location, availability of acceptable water supply, climate and duration of job.

35.12.4 Lead can be unintentionally ingested via eating, drinking, chewing or smoking on the jobsite. The ZARNAS COMPANIES supervision will strictly enforce the policy of no eating, drinking, smoking, chewing gum or using tobacco products in regulated areas. A clean area, free from exposure to lead must be provided for employee's to use as an eating area. Employees using the eating area must have access to hot and cold water, soap and towels and will be required to wash their hands and face before eating. While drinking water is allowed, proper hygiene practices must be observed with regard to water coolers and drinking cups.

35.12.5 Never take food, beverages, tobacco products or cosmetics into work areas with lead exposure at or above the PEL. In addition, employees must wash carefully before handling any of those items.

35.12.6 Compressed air will not be used to clean the work area or protective clothing.

35.12.7 Shoveling, dry or wet sweeping or brushing will only be used when vacuuming with a HEPA-filtered vacuum is not practical or feasible.

35.13 EMPLOYEE NOTIFICATION

35.13.1 Employees should be informed of the specific nature of the operations which could result in exposure to lead above the action level, the purpose, proper selection, fitting, use and limitation of respirators, engineering controls, purpose and a description of the medical surveillance program and the medical removal program.

35.13.2 Affected employees will be notified of the results of any monitoring performed within 15 working days, either individually in writing or by posting the results in an appropriate location that is accessible to affected employees. Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, in the written notice will be included a statement that the permissible exposure limit was exceeded and a description of the corrective action taken or to be taken to reduce exposure to or below the PEL.

35.13.3 Warning signs should be posted in the work area where the PEL is exceeded. Employees are also informed of lead hazards through training.

35.13.3.1 Warning signs in each work area where employee exposure to lead is above the PEL may include WARNING/LEAD WORK AREA/POISON/NO SMOKING OR EATING.

35.13.3.2 Employees must abide by any signs/labels/assessment reports indicating the presence of lead containing materials. Appropriate work practices should be followed to ensure the lead containing materials are not disturbed.

35.13.4 If employees working immediately adjacent to a lead abatement activity are exposed to lead due to the inadequate containment of such job, their employer will either remove the employees from the area until the enclosure breach is repaired or perform an initial exposure assessment.

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35.14 TRAINING

- 35.14.1 The training program informs employees of the specific hazards associated with their work environment, protective measures that can be taken and other important topics.
- 35.14.2 Lead awareness training is required for employees whose work activities may contact lead containing materials but do not disturb the material during their work activities. ZARNAS COMPANIES's will provide training for each employee who has potential exposure to lead at time of hire, during orientation or before assignment to areas containing lead and provide refresher training annually.
- 35.14.3 Lead awareness training will be documented including dates, employee name and trainer name.
- 35.14.4 Employees will be trained on the purpose, selection, fitting, use and limitations of respirators. They will be trained on possible engineering controls and on the medical surveillance program.
- 35.14.5 ZARNAS COMPANIES employees will be trained on the following:
 - 35.14.5.1 Content and purpose of the OSHA lead standard and appendices
 - 35.14.5.2 Specific nature of the operation involving exposure to lead
 - 35.14.5.3 Proper respirator use and fit testing procedures
 - 35.14.5.4 Control measures and hygiene practices used by ZARNAS COMPANIES to control employee exposure to lead
 - 35.14.5.5 ZARNAS COMPANIES medical surveillance and biological testing programs
 - 35.14.5.6 Health effects associated with over exposure to lead dust and fumes
 - 35.14.5.7 Employees access to medical and exposure records
 - 35.14.5.8 ZARNAS COMPANIES employee right to independent medical opinions and consultations

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36.1 PURPOSE

36.1.1 The purpose of this policy is to prevent injury to personnel by requiring specific precautions be taken before and during service, maintenance or repair activities on equipment.

36.2 RESPONSIBILITIES

36.2.1 Employees

- 36.2.1.1 Understanding the purpose and use of equipment isolation procedures
- 36.2.1.2 Recognizing locks and tags
- 36.2.1.3 Not removing locks and tags/Not operating equipment with locks and tags
- 36.2.1.4 Recognizing hazardous energy sources and the means to control them
- 36.2.1.5 Initiating, following and completing equipment isolation procedures.

36.2.2 Authorized employees

- 36.2.2.1 The overall safety and job execution of an equipment-isolation procedures
- 36.2.2.2 Clear and complete communications to all affected personnel
- 36.2.2.3 Authorization of job completion and return to service
- 36.2.2.4 De-energizing the electrical equipment they are qualified to secure
- 36.2.2.5 Verifying electrical circuits have been isolated and tested
- 36.2.2.6 Verifying that electrical equipment can be safely reenergized

36.2.3 Supervisor

- 36.2.3.1 Verifying that equipment specific procedure sheets are completed for the servicing, maintenance and/or repair of each piece of equipment.
- 36.2.3.2 Verifying the annual verification of compliance is completed for each equipment specific procedure sheet kept on file.

36.3 GENERAL PROVISIONS

36.3.1 ZARNAS COMPANIES will maintain a lockout/tagout station within the facility, to comply with the 29 CFR 1926.417 where applicable. The purpose will be to provide locking and tagging hardware for use on temporary jobsites.

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- 36.3.2 ZARNAS COMPANIES follows procedures to prevent incidents resulting from unexpected energizing or startup, release of stored energy or exposure to harmful materials during cleaning, servicing or adjusting of machines, equipment and tools.
- 36.3.3 ZARNAS COMPANIES establishes the minimum requirements used to warn other workers that they will not operate a device that has been locked or tagged out.
- 36.3.4 This procedure applies to all personnel working in or on ZARNAS COMPANIES facilities. This procedure will be followed by employees whose duties require them to service and maintain equipment/systems in which unexpected energization or startup of equipment/system or the release of stored energy could cause injury.
- 36.3.5 ZARNAS COMPANIES establishes general guidelines which must be adhered to by authorized employees prior to performing any repair or maintenance activity.
- 36.3.6 Ensure that all power sources are turned off and/or disabled. Systems may be powered by single source or combination of sources. Potential energy may be in the form of electrical, pneumatic (air), hydraulic, thermal, solar, mechanical, pressurized systems, kinetic energy.
- 36.3.7 Employees performing a servicing activity (ex. repair, installation) must strictly adhere to the requirements of the standard and this program when:
 - 36.3.7.1 It is necessary to either remove or bypass a machine guard or other machine safety device to affect the servicing activity and by doing so, the employee greatly increases risk of exposure to point of operation and related hazards.
 - 36.3.7.2 Other employees are directed to operate machinery or equipment while it is being cleaned or serviced.
 - 36.3.7.3 Power must be left on in the system in order to make adjustments or troubleshoot a system. When such is the case, the below additional procedures will apply:
 - 36.3.7.3.1 At least one person will act as a standby person to immediately shut power to the system if needed.
 - 36.3.7.3.2 At least one person who is trained in first aid will be immediately available.
 - 36.3.7.3.3 At least one person who has knowledge of the process system will be immediately available.
 - 36.3.7.3.4 Emergency services, including rescue, must have been established.
 - 36.3.7.3.5 Other applicable safety regulations (including NEC) will be complied with.
 - 36.3.7.4 There is a real probability that serious physical injury will be avoided by the use of such safeguards.

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- 36.3.8 Push button control panels offer easy accessibility and convenience to the operator, but may be only one of many power sources. Employees should remain aware that simply pushing a button to stop or turning off a piece of equipment does not de-energize the system.
- 36.3.9 Lockout refers to the act of blocking the flow of energy from the power source to the equipment. Such a device must be substantial enough to hold the energy isolating device in an immovable position. ZARNAS COMPANIES employees will use silver colored Master locks in accordance with this program. A lockout device is usually a key lock arrangement that secures a valve or lever in the *OFF* position.
- 36.3.10 Tagout refers to the practice of placing a tag on the energy isolating device to warn others that equipment is not to be engaged due to the presence of another employee in the danger area. ZARNAS COMPANIES employees will use laminated tags with a white background and red lines and lettering thereon, in accordance with this program.
 - 36.3.10.1 Tags should never be bypassed or ignored, even if it appears to be without lock.
 - 36.3.10.2 A tag is sometimes used alone when it is not possible to lockout the energy source or if demonstrated that a tag alone will effectively prevent accidental start-up by representing a visible means of communicating the hazard to affected personnel.
 - 36.3.10.3 Whenever a tag is used in the place of a lock, the tag should be treated by employees as it were a lock, and should be removed only by the individual who placed it there.
- 36.3.11 Periodic inspections of energy control procedures must be conducted once a year to ensure procedure is being followed. Program should address who performs the inspection (it must be someone other than those actually using the lockout/tagout in progress). A certified review of the inspection including date, equipment, employees and the inspector should be documented.

36.4 LOTO PROCEDURE

- 36.4.1 Notify all affected employees that a lockout or tagout will be implemented and the reason for the lockout/tagout. Names, titles and method of notification will be on the lockout/tagout record book.
- 36.4.2 Shut down the equipment by normal stopping procedures.
- 36.4.3 De-energize the equipment at the power source(s) and lock the switch (or use other lockout measures to control energy) in the *OFF* position. De-energization is performed by disconnecting the equipment from its energy source and bleeding any residual energy remaining in the machine.
- 36.4.4 Employee initiating lockout will obtain a lock and tag from the lockout board and place it on the lockout box. Lockout and/or tagout the energy isolating devices with lockout locks and a personalized tag. The *personalized tag* will include the name of the individual placing the device.
- 36.4.5 Before an authorized or affected employee turns off a machine or equipment, the authorized employee will have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled and the methods or means to control the energy.

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- 36.4.6 Notify all affected employees that a lockout or tagout will be implemented and the reason for the lockout/tagout.
- 36.4.7 Shut down will be accomplished by established procedures for the specific machine or equipment.
- 36.4.8 Isolate the equipment from the power source(s) and lock the switch (or use other lockout measures to control energy) in the *OFF* position.
- 36.4.9 Stored energy must be removed once the equipment is isolated. De-energization is performed by disconnecting equipment from its energy source and bleeding any remaining residual energy.
- 36.4.10 If there is a possibility of re-accumulation of stored energy, verification of isolation will be continued until the lockout devices is removed.

36.5 DISABLING EQUIPMENT/MACHINERY PROCEDURE

- 36.5.1 This section contains the minimal acceptable procedure for disabling machinery or equipment. The standard does allow for some exceptions to the rule, but most involve the use of *plug connected* equipment. Employees are encouraged to abide by those lockout/tagout provisions of the customer in all areas of employee safety where it exceeds our own policy.
- 36.5.2 Employees should follow this sequence as a general guidance for implementing the lockout procedure.
 - 36.5.2.1 Prepare for shutdown. Notify all affected personnel that the lockout will take effect. The area immediately affected by the procedure should be isolated from all non-involved personnel. Before an authorized or effected employee turns off a machine or equipment, the authorized employee will have knowledge of the type and magnitude of the energy, hazards of the energy to be controlled and the methods or means to control the energy. Ensure that the customer's site supervisor or HSE representative receives notification to alert his own personnel (when offshore), should they become affected by the lockout procedure.
 - 36.5.2.2 Shut down machinery or equipment. Ensure that all power sources have been isolated and secured from accidental start-up. The equipment will be turned off/shutdown using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.
 - 36.5.2.3 Isolation: All energy isolating devices that are needed to control the energy to the machine or equipment will be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.
 - 36.5.2.4 Application: Apply a lock, issued by the company and a tag. The tag should include the employee's name and the date the tag was placed.
- 36.5.3 Lockout or tagout devices will be affixed to each energy isolating device by authorized employee.
- 36.5.4 Lockout devices will be affixed in a way that will hold energy isolating devices in a safe or off position.

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- 36.5.5 Tagout devices, where used, will be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the safe or off position.
- 36.5.6 Where tags are used with energy isolating devices designed with the capability of being locked, the tag attachment will be fastened at the same point at which the lock would have been attached.
- 36.5.7 Where a tag cannot be affixed directly to the energy isolating device, the tag will be located as close and as safely as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.
- 36.5.8 Stored energy
 - 36.5.8.1 Render safe, all stored or *residual* energy. Test the control button.
 - 36.5.8.2 Follow the application of lockout or tagout devices to energy isolating devices, all potential hazardous stored or residual energy will be relieved, disconnected, restrained and otherwise rendered safely.
- 36.5.9 If there is a possibility of re-accumulation of stored energy level, verification of isolation will be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.
 - 36.5.9.1 Verification of Isolation: Verify the isolation and de-energize of machinery or equipment. Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employee will verify that isolation and de-energize of the machine or equipment have been accomplished. Ensure all buttons are in the off position and any applicable lines have been disconnected or blocked.
- 36.5.10 When canceling the lockout procedure, follow these steps:
 - 36.5.10.1 Inspect the work area to ensure that non-essential items have been removed and that machine or equipment components are intact and capable of operating properly.
 - 36.5.10.2 Check the area around the machine or equipment to ensure that all employees have been safely positioned or removed from harm's way.
 - 36.5.10.3 Make sure locks/tags are not removed without authorization and removed only by those employees who attached them. Supervisory personnel may make other arrangements due to the absence of the employee who attached the device.
 - 36.5.10.3.1 Notify all affected employees after removing locks and tags and before starting equipment or machinery (when applicable).
 - 36.5.10.3.2 The supervisor or other available management person (to include the customer's safety representative) will verify the return to operation decision prior to equipment re-startup.

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36.5.10.4 The following provisions will be followed for safety testing machines when the LOTO devices must be temporarily removed. This procedure will be documented and verified by the authorized employee who performs the removal:

36.5.10.4.1 Clear away tools

36.5.10.4.2 Remove employees

36.5.10.4.3 Remove the LOTO device

36.5.10.4.4 Energize and proceed with testing

36.5.10.4.5 De-energize and reapply control measures

36.5.11 Types of equipment which might require locking and/or tagging, as it relates to ZARNAS COMPANIES work activities, include:

36.5.11.1 Drill presses and forging machines

36.5.11.2 Table saws and lathes

36.5.11.3 Circuit breakers and control boxes

36.5.11.4 Non-plug connected electrical equipment

36.5.11.5 Shearing/cutting machines

36.5.11.6 Pneumatic power systems, to include releasing pressurized air

36.5.12 During temporary jobsite activities the onsite supervisor will monitor and control the use of lockout/tagout device. In all instances ZARNAS COMPANIES employees will place his lock on the lock of the customer to ensure integrity and provide for additional safety of employees.

36.6 INSPECTIONS

36.6.1 Periodically, onsite inspections will be performed by onsite safety committee to certify the integrity of the program. The inspection will be documented to include the date, equipment, employees and the inspector. Inspections will be discussed with the safety committee.

36.6.2 Site and facility supervisors will check integrity of energy isolating devices placed on containment vessels that ZARNAS COMPANIES employees will enter.

36.6.3 Employees should use the attached inspection log when performing inspections of equipment to determine lockout/tagout applicability.

36.6.4 Inspections will be completed at least annually.

36.6.5 ZARNAS COMPANIES will maintain records of periodic inspections carried out in accordance with this program.

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36.6.6 When inspections are concluded, the employee performing the inspection must submit a written certification confirming that the applicable components of the plan have been adhered to. Such certification will include the following information, at a minimum:

- 36.6.6.1 Name of the inspector
- 36.6.6.2 Date the inspection was performed
- 36.6.6.3 The department or location affected by the inspection
- 36.6.6.4 Name or other description of the equipment/machinery being locked and or tagged out
- 36.6.6.5 Reason that the lockout/tagout was affected
- 36.6.6.6 Date and time of anticipated removal
- 36.6.6.7 Location of each lockout or tagout device in use
- 36.6.6.8 Name of the individual who approved the procedure
- 36.6.6.9 Signature certifying accurate information contained in the inspection report

36.7 GROUP LOCKOUT/TAGOUT

- 36.7.1 A principal authorized employee will coordinate the lockout/tagout procedure for all group lockouts/tagouts so as to minimize communication errors which could result in accidents.
- 36.7.2 The authorized employee has primary responsibility for a set number of employees working under the protection of a group lockout or tagout device.
- 36.7.3 Each additional authorized employee (regardless of craft or department) will obtain a lock and tag from the board and place it on the lockout device.
- 36.7.4 Each additional authorized employee is responsible for removal of lock when finished.
- 36.7.5 If and the lockout procedure will remain in effect until all locks have been removed.

36.8 SHIFT OR PERSONNEL CHANGES

- 36.8.1 If the group lockout/tagout is being used and another shift or different personnel are to continue work, the following procedure will be used:
 - 36.8.1.1 The principal authorized employee will coordinate with the oncoming principal authorized employee as to the status of the job, verify all isolation devices locations and remove his lockout/tagout device.
 - 36.8.1.2 The oncoming principal authorized employee will place his lockout/ tagout device.
 - 36.8.1.3 All oncoming authorized employees place personal lockout/tagout devices.

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36.9 VERIFYING LOCKOUT/TAGOUT

36.9.1 As an added measure of safety, all lockouts/tagouts are to be verified as follows:

- 36.9.1.1 After ensuring that no personnel are exposed, operate the push button or other normal operating controls to make certain the equipment will not operate. This is done to confirm that all energy sources have been disconnected or isolated.
- 36.9.1.2 Always return operating controls to *neutral* or *off* position after test.
- 36.9.1.3 The equipment is now locked out and/or tagged out.
- 36.9.1.4 Do not attempt to operate any switch, valve or energy isolating device when it is locked or tagged out.

36.10 TRAINING

36.10.1 Authorized and affected employees must, prior to any involvement in a lockout/tagout operation, receive training in the following:

- 36.10.1.1 Review requirements of OSHA 1926.417 - Lockout and tagging of circuits and 1926.702 - Requirements for equipment and tools
- 36.10.1.2 Identification of the types and magnitudes of energy sources
- 36.10.1.3 Limitations of tagout and the lack of power restraint with the use of the tagout system
- 36.10.1.4 Lockout and/or tagout procedures for the isolation of energy sources
- 36.10.1.5 Procedures for removing locks and/or tags (authorization requirements)
- 36.10.1.6 Procedures for restoring energy
- 36.10.1.7 Recognizing when the energy control procedure is being implemented
- 36.10.1.8 Understanding the purpose of the procedure and the importance of not attempting to startup or use equipment or machinery when locks or tags are displayed
- 36.10.1.9 Recognizing energy sources and emergency power disconnects

36.10.2 Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures or a new hazard is introduced. All training and/or retraining must be documented, signed and certified. The safety director maintains all training records.

36.10.3 Refresher training is required annually.



MOBILE EQUIPMENT

37.1 PURPOSE

37.1.1 The purpose of this policy is to establish guidelines to all free moving mobile equipment that may be propelled by gasoline, propane, diesel or electricity. Only competent personnel may operate mobile equipment. An individual's competency must be demonstrated by successful completion of the training and evaluation process specified in this policy. This policy establishes requirements to work in or around all types of mobile equipment.

37.2 DEFINITIONS

37.2.1 *Free moving mobile equipment* – Operator controlled mobile equipment not constrained by fixed rails and can include industrial fork trucks, aerial lifts, buggies, sweepers and backhoes.

37.2.2 *Mobile equipment* – Free moving equipment propelled/powered by gasoline, propane, natural gas, diesel or electricity used to haul, transport, excavate, move, maneuver or hoist materials, equipment, products or personnel.

37.3 RESPONSIBILITIES

37.3.1 Safety director

37.3.1.1 Ensure that this policy is in the equipment training procedure are followed.

37.3.1.2 Ensure a competent person is available for mobile equipment training.

37.3.1.3 Provide a resource for training the operators of mobile equipment that is needed to operate all equipment safely.

37.3.2 Supervisors

37.3.2.1 Enforce this policy and all departmental rules in the equipment training procedures.

37.3.2.2 Identify and provide the appropriate training for the competent person to conduct mobile equipment training.

37.3.2.3 Ensure that operators of mobile equipment are trained, evaluated, observed and given skills needed to operate the equipment safely.

37.3.2.4 Document random observations and on the spot corrections or department refresher training.

37.3.2.5 Enforce these safety procedures and rules as related to mobile equipment such as but not limited to seat belt use.

37.3.3 Employees

37.3.3.1 Follow this policy and other safety rules pertaining to the pre-shift inspection of, operation and routine maintenance of mobile equipment.

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- 37.3.3.2 Perform pre-shift inspections prior to start of work for respective equipment.
- 37.3.3.3 Report any pre-shift inspection deficiencies with equipment to their immediate supervisor for maintenance or further action prior to operation of the equipment.
- 37.3.3.4 Obey traffic signs and signals and audible or visual warning devices.
- 37.3.4 Competent person
 - 37.3.4.1 Train and evaluate operators in classroom, hands-on training and refreshers.
 - 37.3.4.2 Be knowledgeable and experienced in particular equipment operation and how to train.
 - 37.3.4.3 Document evaluations and training.
- 37.3.5 Risk management safety
 - 37.3.5.1 Provide assistance for compliance with the policy to requesting individual departments.

37.4 GENERAL OPERATING REQUIREMENTS

- 37.4.1 Only authorized persons will operate equipment.
- 37.4.2 All incidents involving mobile equipment will be formally investigated following the accident investigation guidelines.
- 37.4.3 Equipment operators are responsible for keeping the equipment under control at all times. Equipment will only be used for the purpose for which it is designed.
- 37.4.4 All equipment operators must obey traffic signs and signals, and audible or visual warning devices.
- 37.4.5 Alteration or modification of equipment is not permitted without prior written consent of the manufacturer and location management.
- 37.4.6 When parking equipment, the operator must not block fire aisles, access to stairs, stretcher storage, fire equipment or other emergency response areas or equipment.
- 37.4.7 Stunt driving and horseplay are strictly forbidden.
- 37.4.8 All equipment rated capacities will not be exceeded.
- 37.4.9 Equipment operators will perform a pre-shift inspection on all equipment.
- 37.4.10 Any deficiencies found in the pre-shift inspections will be reported and the equipment taken out of service until repairs are made and equipment is safe to operate.
- 37.4.11 The right of way must be yielded to emergency vehicles.
- 37.4.12 Passengers/Riders are not permitted except for the operator unless approved by location management.

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- 37.4.13 Operators must keep both hands free such as not eating, reading or drinking while operating.
- 37.4.14 Equipment must have a reverse signal alarm audible above the surrounding noise level or use of a spotter is required.
- 37.4.15 More specific procedures in *Equipment Operator's Training* for mobile equipment must be followed.
- 37.4.16 No operator will operate mobile equipment without the protection of an enclosed cab or approved eye protection.
- 37.4.17 Before starting the engine, the driver will fasten seat belts and adjust them for a proper fit.
- 37.4.18 The operator of a gasoline or diesel vehicle will shut off the engine before filling the fuel tank and will ensure that the nozzle of the filling hose makes contact with the filling neck of the tank. No one will be on the vehicle during fueling operations except as specifically required by design. There will be no smoking or open flames in the immediate area during fueling operation.

37.5 FREE MOVING EQUIPMENT OR VEHICLES

- 37.5.1 If governors are in use and set to specific speed, they must not be removed or altered in any way.
- 37.5.2 Equipment operators must maintain a safe following distance from other equipment or vehicles (three truck lengths or three seconds).
- 37.5.3 For lines rated 50 kV or below, minimum clearance between the lines and any part of the equipment or load will be at least 20 feet.
- 37.5.4 For intersections with obstructed views, the equipment operator is responsible to slow down, sound the horn and use fixed convex mirrors, where provided to check for cross-traffic.
- 37.5.5 Equipment operators must stay within the floor markings and out of the pedestrian lanes.
- 37.5.6 Seat belts must be worn at all times.
- 37.5.7 Load backrest extension will not increase the maximum weight and provides overhead protection for operators and helps prevent parts of the load from falling on employees.
- 37.5.8 Excess counter-weighting is forbidden.
- 37.5.9 Unstable or unsafely arranged loads will not be picked up and restacked, banded, taped or shrink-wrapped.
- 37.5.10 Transfer loads from broken pallets or containers to sound ones before picking them up and promptly remove these same pallets or containers to void their future use.
- 37.5.11 The proper attachments must be used for the respective equipment.
- 37.5.12 Be aware of bystanders and pedestrians that may be in the target zone of an unstable load.
- 37.5.13 Level the top of the forks and do not lift with only one fork.

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- 37.5.14 Lift from the broadest side of the load and set the forks at the greatest width the pallet allows.
- 37.5.15 Fork extensions will be used for deep loads and can cause a pallet behind the load being lifted to move or fall over.
- 37.5.16 Heavy equipment must be wedged, a spotter used and controls not run from the floor unless made for that type of operation.
- 37.5.17 Off-center loads must be strapped if it could become unstable; operate slower; and use controls such as raise and tilt smoothly.
- 37.5.18 Center of gravity of the load must be as close to the mast as possible. The stability is greater as the center of gravity of the load is brought closer to the front axle.
- 37.5.19 Tilt the mast gently backward to stabilize the load when the load is elevated.
- 37.5.20 Loads become less stable when the load is raised, turning, on slopes, tilting the load, and on rough or uneven surfaces.
- 37.5.21 Traveling surfaces must be able to support the weight of the equipment and the load.
- 37.5.22 Railroad tracks and similar edges will be crossed at a 45-degree angle, where possible.
- 37.5.23 There must be adequate overhead clearance maintained such as from lights, sprinklers and pipes.
- 37.5.24 Employees are responsible to report and help correct leaning stacks.
- 37.5.25 Equipment operators must maintain a safe distances from edges such as elevated ramps, platforms and docks.
- 37.5.26 Transporting an individual in a lift platform is forbidden.
- 37.5.27 Equipment operators must not pass forks or attachments over anyone, nor will anyone pass under them whether the equipment is loaded or empty.
- 37.5.28 Equipment operators will not pass other vehicles moving in the same direction at intersections, blind spots or other dangerous locations.
- 37.5.29 Equipment operators will check that wheels are blocked brakes are set and use dock locks before loading a trailer.
- 37.5.30 Dock boards or bridge plates must be substantial to hold the equipment and the load, be secured and equipment operators travel slowly on them.
- 37.5.31 Floorboard condition must be satisfactory and enough overhead clearance before boarding trailer.
- 37.5.32 Equipment operators need to look back over both shoulders before changing direction or reversing.
- 37.5.33 Equipment operators will travel with the load as close to the floor as possible (one or two inches at the heel of the forks and four to six inches at the tips, with the load resting against the mast).

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- 37.5.34 Equipment operators must follow rules for refueling.
- 37.5.35 When traveling loaded on ramps greater than 10%, equipment operators will always have the load upgrade.
- 37.5.36 When traveling unloaded on ramps, forks will be down ramp and mast tilted back.
- 37.5.37 When leaving free moving equipment or industrial trucks unattended (greater than 25 feet away is abandoned), the operator will place the forks on the floor; put the truck in neutral; set the brakes; shut-off the truck; and block the wheels if on a ramp.
- 37.5.38 Operator will not load the equipment beyond its established load limit and not move loads that because of the length, width or height that have not been centered and secured for safe transportation.
- 37.5.39 When parking near railroad tracks, equipment operators must park no closer than 25 feet from the center of the railroad tracks.
- 37.5.40 Equipment operators will travel with the load trailing if it obstructs their view.
- 37.5.41 Equipment operators must avoid running over loose materials, uneven or soft surfaces and slippery areas including oils slicks. The equipment operator must report and help correct these situations.
- 37.5.42 Equipment operators will slow down for conditions including wet or slippery floors and weather.
- 37.5.43 Equipment operators will avoid running on ice and snow, where possible.
- 37.5.44 All free moving mobile equipment will have back up alarms.
- 37.5.45 Back up alarms and lighting must be inspected during the pre-shift inspections and any deficiencies corrected.
- 37.5.46 Flatbed truck operators will avoid steering wheels all the way in either direction.
- 37.5.47 The load must clear the floor for a flatbed truck before engaging the reverse speed.
- 37.5.48 Flatbed truck operators will pre-examine loads to ensure they do not overload the truck.
- 37.5.49 Flatbed truck operators will not use the reverse direction power for braking.
- 37.5.50 Flatbed truck operators will allow sufficient clearance for lowering loads into storage spaces.

37.6 FORKLIFTS

- 37.6.1 Only certified personnel are permitted to operate the forklift.
- 37.6.2 Operator will perform pre-shift inspections. Forms will be readily available for review.
- 37.6.3 Defective equipment must be locked out until repairs are complete.
- 37.6.4 A preventative maintenance program will be utilized and documented.

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- 37.6.5 Seat belts will be required at all times the forklift is being operated.
- 37.6.6 Make sure there is a clear path before moving loads
- 37.6.7 Always move at a safe speed.
- 37.6.8 Always face the direction of travel.
- 37.6.9 When necessary to travel in reverse, or there is obstruction to vision, have another person guiding.
- 37.6.10 Always sound horn when coming around blind corners, at intersections or traveling in reverse.
- 37.6.11 In picking up a load, forks are set squarely and as far as possible under the load. Never raise or lower loads while traveling. Whether loaded or empty forks will be carried as low as possible.
- 37.6.12 Never swing or suspend loads over people. No one is permitted to walk or stand under raised material handling equipment.
- 37.6.13 On inclines, forklifts must be driven with the load on the upgrade side of the driver.
- 37.6.14 Check to make sure loads are firmly fastened and positioned to prevent tipping or slipping.
- 37.6.15 Avoid any action that might dump a load.
- 37.6.16 Moveable or replaceable forks must be firmly in place by use of a proper securing pin.
- 37.6.17 Never use improvised attachments. Use only those approved by the manufacturer and be certain all attachments are properly secured.
- 37.6.18 Only the operator is permitted to ride the forklift.
- 37.6.19 The forklift may not be left unattended unless the load is lowered, controls are in neutral, brakes are set and the lift is turned off.
- 37.6.20 When the forklift is parked on an incline the wheels will be chocked.
- 37.6.21 When trucks are unloaded the wheels of the truck must be chocked and only approved properly stabilized dock boards may be used.
- 37.6.22 Detached semi-trailers must be properly jacked before being unloaded.
- 37.6.23 The forklift driver will check the soundness of the dock plate and truck floor before driving the forklift onto either.
- 37.6.24 The forklift will be used only for the purpose for which it is designed. Raising personnel is prohibited.
- 37.6.25 Forklift operators are required to be re-evaluated every three years.

37.7 AERIAL LIFT

- 37.7.1 Only authorized persons will operate an aerial lift.

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- 37.7.2 Lift controls will be tested prior to use to ensure safe working conditions.
- 37.7.3 Manlift must not be used to carry any load that does not completely fit into the basket, or, with the addition of the operator's weight, exceeds the rated capacity of the lift.
- 37.7.4 An exception to the above rule can be allowed for installation of pipe or conduit. Pipe or conduit less than ten feet long may be straddled across the top of the manlift provided the total load (operator and materials) is not in excess of the rated capacity of the lift. Operators must abide by safe lifting limits as prescribed in these procedures, and must survey the area for possible contact with electrical conductors.
- 37.7.5 Only appropriate departmental personnel will approve any exceptions to the above.
- 37.7.6 Operators will always stand firmly on the floor of the basket and not sit or climb on the edge of the basket or use planks, ladders or other devices for work position. An approved fall restraint system must be worn when working from an aerial lift.
 - 37.7.6.1 An approved fall restraint system will be attached to the boom or basket when working from an aerial lift and is not permitted to be attached to adjacent poles or structures.
- 37.7.7 The brakes must be set and outrigger, when used, be positioned on pads or solid surface. Wheel chocks are installed before using aerial manlift on an incline surface.
- 37.7.8 Aerial manlift may not be moved when boom is elevated with personnel in basket. The exception is for equipment specifically designed for this type of operation.
- 37.7.9 If aerial manlift is to exceed 16 feet inside facility, all overhead cranes must be locked out and tagged or an observer must be in place to ensure the safety of the personnel.

37.8 MAINTENANCE

- 37.8.1 Inspections should be reviewed periodically and retained for three months.
- 37.8.2 The location will follow the manufacturer's recommendations in their equipment preventative maintenance program.
- 37.8.3 Only designated maintenance personnel are authorized to perform service on equipment.
- 37.8.4 Maintenance will conduct a pre-release inspection on equipment prior to return to service.
- 37.8.5 Power-operated industrial trucks that are not in safe operating condition will be removed from service. Only authorized personnel will make repairs.
- 37.8.6 No repairs will be made in Class I, II and III locations.
- 37.8.7 Those repairs to the fuel and ignition systems of industrial trucks that involve fire hazards will be conducted only in locations designated for such repairs.
- 37.8.8 Trucks in need of repairs to the electrical system will have the battery disconnected before repair.



- 37.8.9 Only parts equivalent to the safety of those in the original design will be used as replacements.
- 37.8.10 Industrial trucks will not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer. They will not be altered by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counter weighting of trucks will not be done unless approved by the truck manufacturer.
- 37.8.11 Industrial trucks will be examined before being placed in service, and will not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination will be made at least daily. Where industrial trucks are used on a round-the-clock basis, they will be examined after each shift. Defects when found will be immediately reported and corrected.
- 37.8.12 When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle will be removed from service and not returned to service until the cause for such overheating has been eliminated.
- 37.8.13 Industrial trucks will be kept in a clean condition, free of lint, excess oil and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100° F.) solvents will not be used. High flash point (at or above 100° F.) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard will be consonant with the agent or solvent used.
- 37.8.14 Industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck, which embodies the features specified for LP or LPS designated trucks. Such conversion equipment will be approved. The description of the component parts of this conversion system and the recommended method of installation on specific trucks are contained in the *Listed by Report*.

37.9 TRAINING AND EVALUATION

- 37.9.1 A formal training program that consists of a combination of classroom instruction with competency testing and practical training.
- 37.9.2 Training will include safety rules, operating procedures, equipment controls and safety work instructions such as, but not limited to, job safety analyses and standard operating procedures.
- 37.9.3 A competent person who has the requisite mobile equipment knowledge, training and experience to conduct the training and evaluations.
- 37.9.4 The competent person will evaluate each prospective operator while performing the safe operation of the equipment.
- 37.9.5 Operators will exhibit satisfactory operating skills and pass a supervised written exam.
- 37.9.6 Employee operating equipment will be certified/re-certified on the specific equipment they operate. Documentation will be training and evaluation records with name of the operator date of training and the competent person performing the training. These records will be retained for review.
- 37.9.7 The safety director will certify that each operator has been trained and evaluated as required. The certification will include the name of the operator, the date of the training, the date of the evaluation and the identity of the person(s) performing the training and evaluation.

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37.9.8 Safe operation topics for training:

- 37.9.8.1 All operating instructions, warnings and precautions for the type of trucks the operator will be authorized to operate.
- 37.9.8.2 Differences between the industrial vehicle and an automobile
- 37.9.8.3 Equipment controls and instrumentation location, what they do and how they work
- 37.9.8.4 Engine or motor operation
- 37.9.8.5 Steering and maneuvering
- 37.9.8.6 Visibility (including restrictions due to loading)
- 37.9.8.7 Fork and attachment adaptation, operation and use limitation
- 37.9.8.8 Vehicle capacity
- 37.9.8.9 Vehicle stability
- 37.9.8.10 Vehicle inspection and maintenance equipment operator will be required to perform
- 37.9.8.11 Any other operating instruction, warning or precaution listed in the operator's manual for the type of vehicle that the employee is being trained to operate
- 37.9.8.12 Workplace related topics and operating procedures (ex. weather, docks, etc.)
- 37.9.8.13 Surface conditions where the vehicle will be operated
- 37.9.8.14 Composition of probable loads and load stability
- 37.9.8.15 Load capacity, manipulation, stacking, unstacking
- 37.9.8.16 Pedestrian traffic areas where vehicles will be operated
- 37.9.8.17 Narrow aisles and other restricted places of operation where vehicles will be operated
- 37.9.8.18 Hazardous (classified) locations where vehicles will be operated
- 37.9.8.19 Ramps and other sloped surfaces that could affect the stability of the vehicle
- 37.9.8.20 Other unique or potentially hazardous environmental conditions that exists or may exist in the workplace
- 37.9.8.21 Closed environments and other areas where insufficient ventilation could cause a build-up of carbon monoxide or diesel exhaust
- 37.9.8.22 Operating limitations
- 37.9.8.23 Refueling and charging/recharging batteries



37.9.9 Classroom training

- 37.9.9.1 The operator must report any problem that is found during the inspection (pre-shift/daily inspection) to the immediate supervisor. Operation of the vehicle is prohibited until needed repairs are complete.
- 37.9.9.2 The visual inspection will include the following: tires and wheels, seat belt, physical damage, lights (front and rear), fluid leaks, lift/lower devices.
- 37.9.9.3 The operation inspection will include the following: horn, steering, hour meter reading, brakes, speed control, neutral safety switch and lift/lower system.
- 37.9.9.4 To ensure a stable load operator are to do the following: tilt forks until level, retract fork carriage as far as possible and spread forks as wide as possible and lock into place.
- 37.9.9.5 Operators are to check overhead for sprinkler heads, beams, light fixtures, or any obstructions before raising the mast on the truck.
- 37.9.9.6 Operators are to make all turns slowly to minimize the effects of centrifugal force.
- 37.9.9.7 Operators are to avoid sudden starts and stops to minimize the effects of momentum.
- 37.9.9.8 Operators are to know the load capacity and carry the designated load at center and appropriate elevated height.
- 37.9.9.9 Operators are to face away from the load and drive in that direction when a tall load obstructs the view.
- 37.9.9.10 Operators will not travel through a facility with a load elevated.

37.9.10 Lift truck operator proficiency training

- 37.9.10.1 Pre-travel inspection
 - 37.9.10.1.1 Assure that no repairs are in progress
 - 37.9.10.1.2 Complete operator's daily checklist-visual checks section.
 - 37.9.10.1.3 Complete operator's daily checklist-operational checks section
 - 37.9.10.1.4 Observe all gauges for correct readings
- 37.9.10.2 Travel and load pickup
 - 37.9.10.2.1 Back up truck from designated parking area.
 - 37.9.10.2.2 Travel to selected work zone
 - 37.9.10.2.3 Select palliated load and adjust forks
 - 37.9.10.2.4 Pick-up load and travel to selected materials storage area



- 37.9.10.3 Operation
 - 37.9.10.3.1 Kept proper distance from hazards and personnel
 - 37.9.10.3.2 Made proper turns without striking objects with counter weight
 - 37.9.10.3.3 Traveled with load at correct height
 - 37.9.10.3.4 Traveled with load balanced
 - 37.9.10.3.5 Traveled at correct speed
 - 37.9.10.3.6 Traveled on rough terrain with correct tires
- 37.9.10.4 Storing material
 - 37.9.10.4.1 Used sufficient mast height and tilt to store load
 - 37.9.10.4.2 Placed load and returned to travel position
 - 37.9.10.4.3 Returned to designated parking place of truck
 - 37.9.10.4.4 (If applicable) placed battery on charge
- 37.9.11 Evaluation and refresher training:
 - 37.9.11.1 A periodic evaluation and periodic formal documented refresher training based on the evaluation will be conducted for equipment operators.
 - 37.9.11.2 A competent person(s) must conduct and document an evaluation of the performance of the operator of heavy equipment/mobile equipment at least initially and where feasible triennially thereafter.
 - 37.9.11.3 Documented corrective training will be required when conditions in the workplace change or the equipment operator demonstrates the following:
 - 37.9.11.3.1 Observed operating in an unsafe manner
 - 37.9.11.3.2 Involved in an incident
 - 37.9.11.3.3 Evaluated not operating the equipment safely
 - 37.9.11.3.4 Assigned to drive a different piece of equipment
 - 37.9.11.3.5 Conditions in the workplace have changed and could affect the safe operation of the equipment.
- 37.9.12 Instructors must have the knowledge and ability to teach and evaluate operators.

Forklift Inspection Daily Checklist

Week of: _____

 Key: X – Good
 O – Attention Needed

General Inspection (All Powered Industrial Truck types)	M	T	W	Th	F	Sat	Sun
Fluid Levels - oil, water, & hydraulic fluid							
Visual leaks, cracks, or any other visible defect including hydraulic hoses and mast chains							
Tire condition & pressure including cuts & gouges							
Condition of the forks and the top clip retaining pin and heel							
Load backrest extension							
Finger guards							
Safety decals & nameplates							
Operator manual on truck and legible							
Operator compartment - check for grease and debris							
All safety devices are working properly including the seatbelt							
Electric forklifts	M	T	W	Th	F	Sat	Sun
Cables and connectors for frayed or exposed wires							
Battery restraints							
Electrolyte levels							
Hood latch							
Internal Combustion Forklifts	M	T	W	Th	F	Sat	Sun
Engine oil							
Break reservoir							
Engine coolant							
Air filter							
Belts and hoses							
Radiator							
Hood latch							
Liquid Propane Forklifts	M	T	W	Th	F	Sat	Sun
Properly mounted tank							
Pressure relief valve pointing up							
Hose and connectors							
Tank restraint brackets							
Tank for dents and cracks							
Tank fits within profile of truck							
Leaks. Use a soapy solution							

Notes:

Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday



ZARNAS

**Operator's Daily Checklist
Internal Combustion Engine Industrial Truck - Gas/LPG/Diesel Truck**

Week of		Operator		Hourly Meter	
Truck#		Model#		Serial#	

SAFETY AND OPERATIONAL CHECKS (PRIOR TO EACH SHIFT)

Have a **qualified** mechanic correct all problems.

Key: X- Good
O - Attention Needed

Engine Off Checks	M	T	W	Th	F	Sat	Sun
Leaks – Fuel, Hydraulic Oil, Engine Oil or Radiator Coolant							
Tires – Condition and Pressure							
Forks, Top Clip Retaining Pin and Heel – Check Condition							
Load Backrest – Securely Attached							
Hydraulic Hoses, Mast Chains, Cables and Stops – Check Visually							
Overhead Guard – Attached							
Finger Guards – Attached							
Propane Tank (LP Gas Truck) – Rust Corrosion, Damage							
Safety Warnings – Attached (Refer to Parts Manual for Location)							
Battery – Check Water/Electrolyte Level and Charge							
All Engine Belts – Check Visually							
Hydraulic Fluid Level – Check Level							
Engine Oil Level – Dipstick							
Transmission Fluid Level – Dipstick							
Engine Air Cleaner – Squeeze Rubber Dirt Trap or Check the Restriction Alarm (if equipped)							
Fuel Sedimentor (Diesel)							
Radiator Coolant – Check Level							
Operator's Manual – In Container							
Nameplate – Attached and Information Matches Model, Serial Number and Attachments							
Seat Belt – Functioning Smoothly							
Hood Latch – Adjusted and Securely Fastened							
Brake Fluid – Check Level							

Engine On Checks – Unusual Noises Must Be Investigated Immediately	M	T	W	Th	F	Sat	Sun
Accelerator or Direction Control Pedal – Functioning Smoothly							
Service Brake – Functioning Smoothly							
Parking Brake – Functioning Smoothly							
Steering Operation – Functioning Smoothly							
Drive Control – Forward/Reverse – Functioning Smoothly							
Tilt Control – Forward and Back – Functioning Smoothly							
Hoist and Lowering Control – Functioning Smoothly							
Attachment Control – Operation							
Horn and Lights – Functioning							
Cab (if equipped) – Heater, Defroster, Wipers – Functioning							
Gauges: Ammeter, Engine Oil Pressure, Hour Meter, Fuel Level, Temperature, Instrument Monitors – Functioning							

Operator's Daily Checklist Electric Industrial Truck



Week of		Operator		Hourly Meter	
Truck#		Model#		Serial#	

SAFETY AND OPERATIONAL CHECKS (PRIOR TO EACH SHIFT)

Have a **qualified** mechanic correct all problems.

Key: X- Good
 O – Attention Needed

Motor Off Checks	M	T	W	Th	F	Sat	Sun
Leaks – Hydraulic Oil, Battery							
Tires – Condition and Pressure							
Forks, Top Clip Retaining Pin and Heel -- Condition							
Load Backrest Extension – Attached							
Hydraulic Hoses, Mast Chains, Cables & Stops – Check Visually							
Finger Guards – Attached							
Overhead Guard – Attached							
Safety Warnings – Attached (Refer to Parts Manual for Location)							
Battery – Water/Electrolyte Level and Charge							
Hydraulic Fluid Level – Dipstick							
Transmission Fluid Level – Dipstick							
Operator's Manual in Container							
Capacity Plate Attached – Information Matches Model, Serial Number and Attachments							
Battery Restraint System – Adjust and Fasten							
Operator Protection Sit Down Truck - Seat Belt – Functioning Smoothly Man-up Truck – Fall protection/Restraining means - Functioning							
Brake Fluid – Check level							

Motor On Checks (Unusual Noises Must Be Investigated Immediately)	M	T	W	Th	F	Sat	Sun
Accelerator Linkage – Functioning Smoothly							
Parking Brake – Functioning Smoothly							
Service Brake – Functioning Smoothly							
Steering Operation – Functioning Smoothly							
Drive Control – Forward/Reverse – Functioning Smoothly							
Tilt Control – Forward and Back – Functioning Smoothly							
Hoist and Lowering Control – Functioning Smoothly							
Attachment Control – Operation							
Horn – Functioning							
Lights & Alarms (where present) – Functioning							
Hour Meter – Functioning							
Battery Discharge Indicator – Functioning							
Instrument Monitors – Functioning							

Operator's Daily Checklist Electric Pallet Jacks



Week of		Operator		Hourly Meter	
Truck#		Model#		Serial#	

SAFETY AND OPERATIONAL CHECKS (PRIOR TO EACH SHIFT)

Have a **qualified** mechanic correct all problems.

Key: X- Good
 O – Attention Needed

	M	T	W	Th	F	Sat	Sun
Tires/Wheels: wear, damage, nuts tight							
Gauges/Instruments: damage, operation							
Warning Decals/Operators' Manual: Missing, not readable							
Data Plate: not readable, missing							
Forks: bent, worn, stops OK							
Covers/Sheet metal: damaged, missing							
Brake: Emergency Brake Test							
Steering: rolls up, down, back and forth freely							
Horn: Operational							
Battery connections loose, charge, electrolyte lot							
Lift/Lower: loose/binding, excessive drift, leaks							
Directional Control: lose/binding, find neutral OK							

Notes:

Monday:
Tuesday:
Wednesday:
Thursday:
Friday:
Saturday:
Sunday:



ZARNAS

Sample Training Exercises and Tests for Forklift Operators



SAFETY TRAINING - FORKLIFT WRITTEN PROFICIENCY TEST

Student's Name: _____

Date: _____

Time: _____

Company: _____

Employee #: _____

		True	False
1	Only authorized and trained employees or their supervisors can operate a forklift	<input type="checkbox"/>	<input type="checkbox"/>
2	Operators are required to inspect their forklift prior to use	<input type="checkbox"/>	<input type="checkbox"/>
3	Riders are allowed on a forklift if they are strapped in	<input type="checkbox"/>	<input type="checkbox"/>
4	Travel with your load high enough to see under it	<input type="checkbox"/>	<input type="checkbox"/>
5	Pedestrians have the right of way, except when the forklift driver is in a hurry	<input type="checkbox"/>	<input type="checkbox"/>
6	Always look over both shoulders before backing up	<input type="checkbox"/>	<input type="checkbox"/>
7	If your vision is obstructed when traveling with a load, travel in reverse	<input type="checkbox"/>	<input type="checkbox"/>
8	You only need to obey traffic rules and signs when people are around	<input type="checkbox"/>	<input type="checkbox"/>
9	A forklift is less stable when the mast is raised during load stacking and unstacking	<input type="checkbox"/>	<input type="checkbox"/>
10	Forklift repairs should be made whenever you get a break from work	<input type="checkbox"/>	<input type="checkbox"/>
11	Forks should be inserted into the pallet at least three quarters of the way	<input type="checkbox"/>	<input type="checkbox"/>
12	The rated capacity will not be affected by the use of special load attachments	<input type="checkbox"/>	<input type="checkbox"/>
13	Always check the mast for cracked or broken welds	<input type="checkbox"/>	<input type="checkbox"/>
14	Always drive straight-on when driving over railroad tracks	<input type="checkbox"/>	<input type="checkbox"/>
15	A forklift's rated capacity is located on the manufacturer's ID plate	<input type="checkbox"/>	<input type="checkbox"/>
16	Allow at least one forklift length when driving behind another vehicle	<input type="checkbox"/>	<input type="checkbox"/>
17	Five miles an hour is always a safe driving speed	<input type="checkbox"/>	<input type="checkbox"/>
18	Industrial areas/warehouses can have low overhead clearances	<input type="checkbox"/>	<input type="checkbox"/>
19	When you are working in a trailer, you should use dock lights or headlights	<input type="checkbox"/>	<input type="checkbox"/>
20	A lateral tip-over is usually caused by driving over trash or carrying a load too high	<input type="checkbox"/>	<input type="checkbox"/>
21	When carrying a load, you drive down a ramp forks first	<input type="checkbox"/>	<input type="checkbox"/>
22	The front wheels steer a forklift	<input type="checkbox"/>	<input type="checkbox"/>
23	When turning into an aisle, steer wide	<input type="checkbox"/>	<input type="checkbox"/>
24	Turning off the engine is all you need to do when leaving a forklift unattended	<input type="checkbox"/>	<input type="checkbox"/>
25	When traveling with a load, keep the forks approximately six inches off the surface	<input type="checkbox"/>	<input type="checkbox"/>
26	The only check that a battery needs is for cracks or holes	<input type="checkbox"/>	<input type="checkbox"/>
27	Forklifts are powered by battery, gasoline, diesel or propane	<input type="checkbox"/>	<input type="checkbox"/>
28	Pre-use inspections should require that each hydraulic line be checked	<input type="checkbox"/>	<input type="checkbox"/>
29	The forklift should always be started at the beginning of a pre-inspection	<input type="checkbox"/>	<input type="checkbox"/>
30	If the mast height must be adjusted, only lower the mast when in forward motion	<input type="checkbox"/>	<input type="checkbox"/>
31	When setting down your load, start leveling forks before reaching your destination	<input type="checkbox"/>	<input type="checkbox"/>
32	After picking up a load, the forklift will be more stable if the mast is tilted forward	<input type="checkbox"/>	<input type="checkbox"/>
33	Before pre-inspection it is OK to lift a heavy object to check the lift cylinders	<input type="checkbox"/>	<input type="checkbox"/>
34	If a tire is not flat, assume the vehicle is useable	<input type="checkbox"/>	<input type="checkbox"/>
35	When loading a trailer with a forklift that is too heavy, use more trailer supports	<input type="checkbox"/>	<input type="checkbox"/>
36	Drive at a steady speed to avoid slipping and skidding on bridge plates	<input type="checkbox"/>	<input type="checkbox"/>
37	Forklift tires are engineered to prevent skidding, slipping and sliding	<input type="checkbox"/>	<input type="checkbox"/>
38	Propane tanks should be checked for leaks and for secure valves and nozzles	<input type="checkbox"/>	<input type="checkbox"/>
39	Inadequately trained spotters have been caught between fixed objects and forklifts	<input type="checkbox"/>	<input type="checkbox"/>



SAFETY TRAINING - FORKLIFT ANSWER SHEET

		True	False
1	Only authorized and trained employees or their supervisors can operate a forklift	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Operators are required to inspect their forklift prior to use	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Riders are allowed on a forklift if they are strapped in	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Travel with your load high enough to see under it	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Pedestrians have the right of way, except when the forklift driver is in a hurry	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Always look over both shoulders before backing up	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	If your vision is obstructed when traveling with a load, travel in reverse	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	You only need to obey traffic rules and signs when people are around	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	A forklift is less stable when the mast is raised during load stacking and unstacking	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Forklift repairs should be made whenever you get a break from work	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11	Forks should be inserted into the pallet at least three quarters of the way	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12	The rated capacity will not be affected by the use of special load attachments	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	Always check the mast for cracked or broken welds	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14	Always drive strait-on when driving over railroad tracks	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15	A forklift's rated capacity is located on the manufacturer's ID plate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16	Allow at least one forklift length when driving behind another vehicle	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17	Five miles an hour is always a safe driving speed	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18	Industrial areas/warehouses can have low overhead clearances	<input checked="" type="checkbox"/>	<input type="checkbox"/>
19	When you are working in a trailer, you should use dock lights or headlights	<input checked="" type="checkbox"/>	<input type="checkbox"/>
20	A lateral tip-over is usually caused by driving over trash or carrying a load too high	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21	When carrying a load, you drive down a ramp forks first	<input type="checkbox"/>	<input checked="" type="checkbox"/>
22	The front wheels steer a forklift	<input type="checkbox"/>	<input checked="" type="checkbox"/>
23	When turning into an aisle, steer wide	<input checked="" type="checkbox"/>	<input type="checkbox"/>
24	Turning off the engine is all you need to do when leaving a forklift unattended	<input type="checkbox"/>	<input checked="" type="checkbox"/>
25	When traveling with a load, keep the forks approximately six inches off the surface	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26	The only check that a battery needs is for cracks or holes	<input type="checkbox"/>	<input checked="" type="checkbox"/>
27	Forklifts are powered by battery, gasoline, diesel or propane	<input checked="" type="checkbox"/>	<input type="checkbox"/>
28	Pre-use inspections should require that each hydraulic line be checked	<input checked="" type="checkbox"/>	<input type="checkbox"/>
29	The forklift should always be started at the beginning of a pre-inspection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
30	If the mast height must be adjusted, only lower the mast when in forward motion	<input type="checkbox"/>	<input checked="" type="checkbox"/>
31	When setting down your load, start leveling forks before reaching your destination	<input type="checkbox"/>	<input checked="" type="checkbox"/>
32	After picking up a load, the forklift will be more stable if the mast is tilted forward	<input type="checkbox"/>	<input checked="" type="checkbox"/>
33	Before pre-inspection it is OK to lift a heavy object to check the lift cylinders	<input type="checkbox"/>	<input checked="" type="checkbox"/>
34	If a tire is not flat, assume the vehicle is useable	<input type="checkbox"/>	<input checked="" type="checkbox"/>
35	When loading a trailer with a forklift that is too heavy, use more trailer supports	<input checked="" type="checkbox"/>	<input type="checkbox"/>
36	Drive at a steady speed to avoid slipping and skidding on bridge plates	<input checked="" type="checkbox"/>	<input type="checkbox"/>
37	Forklift tires are engineered to prevent skidding, slipping and sliding	<input type="checkbox"/>	<input checked="" type="checkbox"/>
38	Propane tanks should be checked for leaks and for secure valves and nozzles	<input checked="" type="checkbox"/>	<input type="checkbox"/>
39	Inadequately trained spotters have been caught between fixed objects and forklifts	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Forklift Training Group Exercise

- 1. Define the term counterweight and discuss its role in forklift load handling.**
- 2. Discuss forklift longitudinal stability and the importance it has in forklift operation.**
- 3. What is the stability triangle?**
- 4. Discuss what is meant by lateral stability.**
- 5. Define the term dynamic stability.**
- 6. Define the term fulcrum. How is the term relevant to forklift operation?**
- 7. What is the difference between track and wheelbase? How could these differences effect forklift operations?**
- 8. How does grade affect forklift operation?**

Forklift Training Group Exercise Answers

1. Define the term counterweight and discuss its role in forklift load handling.

Weight that is part of the basic structure of a truck that is used to offset the load and maximize the resistance to keep the truck from tipping over.

2. Discuss forklift longitudinal stability and the importance it has in forklift operation.

This is the resistance of a truck to overturning forward or rearward

3. What is the stability triangle?

The vehicle wheelbase, track height, and weight distribution of the load, and the location of the counterweights of the vehicle.

4. Discuss what is meant by lateral stability.

It is the line of action: a vertical line that passes through combined center of gravity of the vehicle and the load.

5. Define the term dynamic stability.

This is when the vehicle and load are put into motion; moving, braking, cornering, lifting, tilting, and lowering loads, etc. are important stability considerations.

6. Define the term fulcrum. How is the term relevant to forklift operation?

The fulcrum would be the pivot point pertaining to forklift operations: the axis of rotation of the truck when it tips over.

7. What is the difference between track and wheelbase? How could these differences effect forklift operations?

Track is the distance between wheels on the same axle. Wheelbase is the distance between centers of the front and rear wheels of the forklift.

8. How does grade affect forklift operation?

It can upset the stability triangle. Grade is measured as the number of feet in rise of fall over a hundred foot horizontal distance.



SAFETY TRAINING - FORKLIFT DRIVING PROFICIENCY TEST

Student's Name: _____

Date: _____ Time: _____

Company: _____

Employee #: _____

Results: Pass Fail Number Failed: _____

	CATEGORY	ACTION	Pass	Fail	N/A
1	Forklift Inspection	Able to accurately follow vehicle inspection checklist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Operating Principles	Able to identify type of power source	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Operating Principles	Able to follow local procedures for refueling/recharging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Operating Principles	Able to safely start vehicle in preparation for use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Operating Principles	Understands use/location of controls and gauges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Operating Principles	Able to demonstrate example of unattended vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Fork Adjustment	Able to determine proper adjustment of forks for load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Traffic Patterns	Able to maintain vehicle within established traffic pattern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Traffic Patterns	Able to recognize warning devices, mirrors, guards etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Forklift Type	Able to determine the type and configuration of vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Forklift Type	Able to determine rated lifting capacity of vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Picking Up Loads	Approaches slowly and straight-on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Picking Up Loads	Stops when forks are about a foot from load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Picking Up Loads	Safely engages pallet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Picking Up Loads	Checks mast height for obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Picking Up Loads	Slowly/safely picks up load with load against backrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Picking Up Loads	Checks rear for pedestrians, traffic, obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Unstacking Loads	Approaches slowly and straight-on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Unstacking Loads	Stops when forks are about a foot from load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	Unstacking Loads	Checks mast height for obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	Unstacking Loads	Safely raises forks to desired height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	Unstacking Loads	Safely engages pallet and tilts to safe angle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	Unstacking Loads	Slowly and safely picks up load and lowers to safe height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	Stacking Loads	Approaches slowly and straight-on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	Stacking Loads	Stops when forks are about a foot from load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	Stacking Loads	Checks mast height for obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	Stacking Loads	Safely raises forks to desired height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	Stacking Loads	Safely drives forward until load is squarely over stack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	Stacking Loads	Safely tilts to safe angle and places load on stack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	Stacking Loads	Slowly and safely levels forks within inside of pallet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	Stacking Loads	Checks rear for pedestrians, traffic, obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32	Stacking Loads	Slowly and safely backs out and lowers to safe height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33	Driving With Loads	Plans load route based on current path obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	Driving With Loads	Carries load with load tilted back to safe angle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35	Driving With Loads	Carries load with forks at safe height above surface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	Driving With Loads	Drives cautiously and at slow speeds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37	Driving With Loads	Avoids tight turns when possible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	Driving With Loads	Applies brakes smoothly and evenly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39	Driving With Loads	Aware of overhead clearances and mast height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	CATEGORY	ACTION	Pass	Fail	N/A
40	Driving With Loads	Never passes pedestrians (allows them to yield way)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41	Driving With Loads	Obeys all local traffic rules and signs en-route	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42	Driving With Loads	Uses horns when approaching corners, doorways etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	Driving With Loads	Uses mirrors effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44	Driving With Loads	Maintains a safe distance from other vehicles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	Driving With Loads	Passes other vehicles only in authorized areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46	Driving With Loads	Approaches railroad tracks at 45 degree angle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47	Driving With Loads	Slowly and safely levels forks within inside of pallet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48	Loading Docks	Checks bridge or dock plates for safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49	Loading Docks	Approaches bridge or dock plates straight-on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50	Loading Docks	Never accelerates on bridge or dock plates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51	Loading Docks	Maintains safe distances from edges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52	Trailer Operations	Verifies trailer floor is rated for vehicle weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53	Trailer Operations	Verifies trailer floor is in serviceable condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54	Trailer Operations	Verifies trailer will not roll	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55	Trailer Operations	Verifies that vehicle will not unbalance trailer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56	Trailer Operations	Checks interior trailer height before loading or unloading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57	Ramp Operations	Loaded Vehicle - Travels up ramp load first	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58	Ramp Operations	Loaded Vehicle - Travels down ramp load last	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
59	Ramp Operations	Unloaded Vehicle - Travels up ramp forks last	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60	Ramp Operations	Unloaded Vehicle - Travels down ramp forks first	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
61	Obstacle Course	Maintains safe distance from obstacles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62	Obstacle Course	Able to maneuver safely in tight areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
63	Obstacle Course	Maintains safe speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
64	Obstacle Course	Accelerates and brakes smoothly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



FORKLIFT OPERATOR SKILLS EVALUATION

Driver's Name _____

Grading Scale: 1 = Poor 2 = Fair 3 = Good 4 = Excellent

Prospective operators must score 100 for successful completion.

-
- | | |
|--|----------------------------------|
| ___1. Conducted a proper inspection. | ___21. Made sure wheels chocked. |
| ___2. Shows familiarity with the controls. | ___22. Smooth stops and starts. |
| ___3. Planned route of travel. | ___23. Obeyed all signs. |
| ___4. Clear view of direction of travel. | ___24. Parked properly. |
| ___5. Slowed down at intersections. | ___25. Used seat belt. |
| ___6. Sounded horn at intersections. | |
| ___7. Turned comers slowly, aware of rear end swing. | |
| ___8. Yielded to pedestrians. | |
| ___9. Drove under control and within traffic lane. | |
| ___10. Approached load slowly and squarely. | |
| ___11. Positioned forks properly under load. | |
| ___12. Lifted load properly. | |
| ___13. Maintained a balanced load. | |
| ___14. Maneuvered with load properly. | _____ |
| ___15. Traveled with load properly. | (Total Score) |
| ___16. Lowered load smoothly. | |
| ___17. Stacked loads properly. | _____ |
| ___18. Placed load within designated area. | (Competent Person) |
| ___19. Drove straight up and straight down inclines. | |
| ___20. Inspected bridge plates and dock boards. | _____ |
| | (Date) |
| | _____ |
| | (Equipment) |



NATURALLY OCCURRING RADIOACTIVE MATERIALS

38.1 PURPOSE

- 38.1.1 The purpose of this policy is to identify the presence of naturally occurring radioactive material (NORM) in its operations and control the exposure to ZARNAS COMPANIES personnel as well as the environment.
- 38.1.2 ZARNAS COMPANIES will control potential exposure to NORM through identification, employee training and safe handling procedures. Equipment and facilities with elevated radioactivity will be identified prior to performing any work and ZARNAS COMPANIES personnel to NORM environments. Site identification, safe practice provisions, storage and handling guidelines detailed in the remainder of this section apply to all facilities where an elevated level of radioactivity has been exhibited. The waste, property and equipment disposition provisions are applicable where a radioactive level in excess of governmental mandated ceilings or acceptable industry standards has been detected.

38.2 RESPONSIBILITIES

- 38.2.1 ZARNAS COMPANIES safety director, Dean Warren has the responsibility of ensuring adherence to ZARNAS COMPANIES NORM policy as well as the following:
 - 38.2.1.1 Provide training covering PPE requirements, safety precautions and handling procedures to all employees working with potential NORM tainted equipment, material, sands and/or solids.
 - 38.2.1.2 Ensure employees performing equipment repair are advised of the potential presence of NORM and that PPE requirements, safety precautions and handling procedures are being followed.
 - 38.2.1.3 Ensure proper packaging, shipping papers, labels and placards are provided prior to transport of NORM containing equipment, materials and sands and/or soils.
 - 38.2.1.4 Ensure that a survey of tubing, equipment, materials, sands and/or soils is performed to determine the presence of NORM prior to releasing for repair or disposal.
- 38.2.2 Each manager, supervisor and other employees involved in work where such radiation exposures may be present share in the responsibility for maintaining a safety margin by use of site specific and task specific safe work procedures based on hazard analysis and safety planning prior to the commencing of work.

38.3 BASIC RADIATION EXPOSURE SOURCES

- 38.3.1 External (penetration through the skin) Gamma radiation exposure
 - 38.3.1.1 Contaminated equipment
 - 38.3.1.2 Contaminated soil
- 38.3.2 Internal (Alpha, Beta and Gamma) radiation exposure



38.3.2.1 Inhalation of Radon or NORM particles

38.3.2.2 Ingestion of NORM radionuclides

38.3.3 Enhanced levels of NORM radionuclides may be associated with certain natural materials, minerals and other resources. Exploitation of these resources may lead to further enhancement of the radioactivity in the products, byproduct, residues or waste arising from the industrial process. A potential outcome is an increase in occupational exposure to radiation.

38.3.4 This is of particular importance to ZARNAS COMPANIES because of the major mining and mineral processing activities and the large scale production and use of fossil fuels.

38.3.5 Locations of possible exposures:

38.3.5.1 Mining and mineral processing, including mineral sand, alumina, tantalum, tin smelting and copper production

38.3.5.2 Downstream processing of heavy minerals, including titanium and zirconium (a refractory material in the steel industry, in abrasive materials)

38.3.5.3 Fossil fuel use

38.3.5.4 Metal smelting process

38.3.5.5 Ceramics and building materials

38.3.5.6 Abrasive blasting operations

38.3.5.7 Water treatment and purification

38.4 BASIC NORM EXPOSURE PRECAUTIONS

38.4.1 Measurements of NORM levels in the majority of producing operations to date have been well below the standards for both public health and employee exposure protection. However, the purpose of this guideline is to minimize employee exposure to the low levels of radioactivity in the equipment where NORM does exist.

38.4.2 The following guidelines are applicable to all activities associated with exposure or potential exposure to NORM and should be followed at all times.

38.4.3 Advise employees and contractors of the presence of NORM and any precautionary guidelines to be followed.

38.4.4 Direct skin contact with NORM containing scale and solids will be avoided to the maximum extent reasonably possible.

38.4.5 Eating, drinking, smoking and chewing will not be allowed in the immediate area where work is being performed on contaminated equipment or contaminated soils are being handled.



- 38.4.6 Personnel will thoroughly wash their hands and face after working on or around contaminated equipment and prior to eating, drinking, smoking or chewing.
- 38.4.7 Protective gloves, clothing, apparatus, rags, etc., should be decontaminated after use. If decontamination is not possible, those articles should be placed in properly labeled drums for subsequent disposal.
- 38.4.8 Personnel will be monitored following completion of work.
- 38.4.9 NORM containing scale and solids will be handled in the wet state to minimize airborne particles.
- 38.4.10 The number of personnel in the work area will be kept to an absolute minimum.
- 38.4.11 Activities which could potentially create airborne NORM particles such as grinding, drilling, polishing, welding or brazing will require the use of a NIOSH approved high efficiency particulate respirator suitable for low level radionuclides.
- 38.4.12 Suitable disposable coveralls, slicker suits, etc. will be worn.
- 38.4.13 Impervious gloves and rubber boots will be worn.
- 38.4.14 Work will be conducted in well ventilated areas. If natural ventilation is not sufficient, forced ventilation will be installed to remove gases and airborne particulate.
- 38.4.15 Plastic ground covers will be used whenever possible to contain contaminates which may fall to the ground.
- 38.4.16 Additional radiation monitoring will be conducted during the time work on contaminated equipment is being performed.

38.5 MONITORING

- 38.5.1 A competent person designated by ZARNAS COMPANIES safety director will perform NORM surveys for all suspected NORM contaminated materials. Monitoring guidelines will be as follows:
 - 38.5.1.1 Maximum allowable dose rate to an individual is 1250 mR/calendar quarter. Approximately 2.4 mR/hour for an 8 hour shift in a 40 hour week.
 - 38.5.1.2 Exposure monitoring is required for a dose exceeding 350 mR/calendar quarter. Approximately 0.6 mR/hour an hour for an 8 hour shift.
 - 38.5.1.3 OSHA regulates exposures to airborne radioactive material by reference to the Nuclear Regulatory Commission regulations.
- 38.5.2 Radiation detection instrumentation will be provided as appropriate for performing necessary surveys and monitoring. The instrumentation will be selected based upon the type of radiation detected, minimum detectable activity measurement capability and range in accordance with the radiological hazards present or anticipated for the job.



38.5.3 Detection and monitoring will be done only by trained and qualified personnel who are familiar with the type(s) of equipment in use and methods to be followed as determined by the site specific radiation protection program.

38.6 CONTROLLING AND MINIMIZING EXPOSURE

38.6.1 Measure all sources and levels of radiation.

38.6.2 Minimize time spent in radiation areas.

38.6.3 Maximize the distance between you and source.

38.6.4 Shields are to be used to block and reduce radiation levels.

38.7 TRAINING

38.7.1 All employees engaged in work assignments where the potential for NORM accumulation exists will be trained to an awareness level on the subject of NORM. Training will be done prior to exposure and annually thereafter.

38.7.1.1 Recognition of potential NORM containing equipment and material

38.7.1.2 Health effects associated with exposure to low level radiation

38.7.1.3 Methods by which NORM may enter the body.

38.7.1.4 Safety precautions and personal protective equipment.

38.7.1.5 Handling procedures for dismantling equipment, vessel and tank entry, scale removal, equipment repair, pulling and rattling tubing, etc.

38.7.1.6 Normal and emergency operational procedures.

38.7.2 Records of persons receiving awareness level training will be documented and maintained in the training data base.

PERSONAL PROTECTIVE EQUIPMENT

Revision Date: 05/2015



PERSONAL PROTECTIVE EQUIPMENT

39.1 PURPOSE

39.1.1 The purpose of this policy is to ensure that PPE used by personnel working or visiting on ZARNAS COMPANIES controlled jobsites offer maximum protection from hazards encountered. This policy identifies the minimum requirements to ensure that PPE used meets or exceeds governmental, company and client requirements.

39.2 RESPONSIBILITIES

39.2.1 The safety director is responsible for the maintenance and issue of this policy.

39.2.2 The safety director is responsible for control of purchase and distribution of PPE equipment for employees that meet the requirements of this policy. The procurement department will ensure that the requirements of this policy are included in vendor and contractor purchase orders/agreements.

39.2.3 Companies working under ZARNAS COMPANIES are responsible for providing PPE to their personnel that meet the requirements of this policy, as a minimum.

39.2.4 ZARNAS COMPANIES employees will take personal responsibility to follow the requirements set forth in this document.

39.3 HAZARD ASSESSMENT

39.3.1 A hazard assessment of the workplace must be performed to determine if hazards are likely or may be present that necessitate the use of PPE. Refer to 29 CFR SUBPART I, APPENDIX B, for the proper method to conducting an assessment. Hazard assessments must be reviewed to determine proper PPE selection and reason for selection should be available to the employee.

39.3.2 A written certification must be prepared that contains the following information:

39.3.2.1 The location or workplace evaluated

39.3.2.2 The name of the person certifying that the evaluation has been performed

39.3.2.3 Signature of certifying person

39.3.2.4 The date(s) of the hazard assessment

39.4 PROCEDURE

39.4.1 All PPE used must be the right kind of equipment for the job and that it must be maintained properly - even when workers are using their own equipment. PPE selected for the job must meet the following requirements for each employee:

39.4.1.1 PPE will provide a level of protection above minimum required to protect the worker.

39.4.1.2 PPE will fit properly.

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- 39.4.1.3 Defective or damaged PPE is not used.
- 39.4.1.4 All PPE will be properly cleaned and maintained on a regular basis.
- 39.4.2 In the event an employee produces their own PPE (due to medical or other extenuating circumstances), each piece of equipment will be inspected to assure compliance with all regulatory requirements. ZARNAS COMPANIES will assume responsibility for the sanitation and maintenance of supplied equipment accordingly. Defective or damaged equipment will not be used and will be replaced before beginning work.
- 39.4.3 Protective equipment, including personal protective equipment for eyes, face, head and extremities, protective clothing, respiratory devices and protective shields and barriers, will be provided, used and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.
- 39.4.4 Employee are required to attend PPE training and use PPE in accordance with the training. ZARNAS COMPANIES will provide the required PPE and training.
- 39.4.5 Employees must take all reasonable steps to care for and correctly store PPE when not in use. Where an item of PPE becomes defective or is lost, the employee must report the loss or defect immediately to his or her immediate supervisor who will authorize a replacement.
- 39.4.6 Employees will be allowed to select from different sizes of PPE (uniforms), when applicable, to ensure the most comfortable fit. Employees are required to maintain their own equipment and turn in defective or worn equipment for replacement immediately upon detection.
- 39.4.7 Request for PPE will be made through the safety manager and procurement.
- 39.4.8 The following PPE will be supplied to each ZARNAS COMPANIES employee:

Type	Source of Supply	Replacement Frequency
Hard hat	ZARNAS procurement	As needed or change in work environment
Safety glasses	ZARNAS procurement or at ZARNAS jobsite	As needed or change in work environment
Safety-toe footwear	Purchased by employee	Once every 2 years if signs of wear that reduce safety factor or change in work environment
Hearing protection	ZARNAS procurement or at ZARNAS jobsite	As needed or change in work environment
Hand protection	ZARNAS procurement or at ZARNAS jobsite	As needed or change in work environment
Work clothing	ZARNAS procurement	Annually or if signs of wear that reduce safety factor or change in work environment
Fall protection	ZARNAS procurement	Once every 2 years if signs of wear that reduce safety factor or change in work environment
PFDs	ZARNAS procurement or at ZARNAS jobsite	As needed or change in work environment

- 39.4.9 ZARNAS COMPANIES requires that every 3rd party vendors and subcontractors who are contracted to perform services on behalf of ZARNAS COMPANIES and are working on ZARNAS COMPANIES premises, will provide their personnel, at their expense, with PPE and PPE training that meet or exceed the requirements identified in this policy. These requirements will be included in vendor and contractor purchase orders/agreements.

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39.4.10 It is required that *safe zones* be established within jobsites. These zones must be clearly marked with yellow lines on the floor or, where this is not appropriate, by other means of approved, agreed delineation (ex. off the site). Prior to establishing a safe zone, a risk assessment must be performed and documented in which hazards have been identified and evaluated as posing minimal risk. After completion of the risk assessment, when it has been determined that these zones do not present a hazard to personnel, the use of PPE will not be required within these areas.

39.4.11 When an employee supplies his own PPE (safety shoes), then such employee owned equipment must be approved by the safety director to ensure its adequacy, maintenance and sanitation and that it meets applicable ansi requirements for the degree and type of hazard it is designed by the manufacturer to protect the wearer.

39.5 HEAD PROTECTION

39.5.1 Hard hats meeting ANSI Z89.1 standards are mandatory in all operation areas except as designated in the local hazard assessment.

39.5.2 Personnel are required to wear a protective helmet when working in areas where there is a potential for injury to the head from falling objects or where there is potential for electric shock or burns due to contact with exposed electrical conductors which could contact the head. Head protection will be per ANSI Z89.1-2003, Type 1 approved.

39.5.3 Hard hats will be inspected daily or prior to each use per the manufacturer's recommendation. If a hard hat becomes brittle, cracks or is otherwise damaged, it will be replaced immediately.

39.5.4 Suspensions and shells must be replaced per the manufacturer's recommendation. (ex: Suspensions be replaced at least annually and that shells be replaced at least every 5 years)

39.6 EYE AND FACE PROTECTION

39.6.1 ASSE/ANSI Z87.1 -2003 approved with fixed side shields. With corrective glasses, eye protection equipment required by this standard will be of the type that can be worn over glasses. Prescription-ground safety lenses may be substituted if they provide equivalent protection.

39.6.2 Approved safety glasses with side shields or goggles meeting ANSI Z87.1 standards are mandatory in all operation areas except as designated in the local hazard assessment.

39.6.3 Prescription safety glasses should be purchased by employees who wears corrective lenses and performs tasks where eye protection is necessary (or shatter-proof protective goggles). Contact lenses may be permitted but require the use of eye protection.

39.6.4 Operations which require additional eye protection will be assessed on an individual basis. Chemical handling may require the use of specific safety glasses/goggles per the SDS.

39.6.5 During all operations involving grinding, chipping and buffing or where material could separate and become a projectile, a face shield will be worn in conjunction with safety glasses/goggles. Chemical handling may require the use of specific face shields per the SDS.



39.7 HAND PROTECTION

39.7.1 Where there is exposure to hazards such as skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns, harmful temperature extremes and sharp objects will be provided and used.

39.8 HEARING PROTECTION

39.8.1 Must be readily accessible and worn whenever working areas and employee noise exposures equal or exceed an 8 hour TWA of 85 dB measured on the scale of a standard sound level meter at slow response or equivalently, a dose of 50%.

39.8.2 The hazard assessment will identify areas where hearing protection is necessary and at what level or degree of protection as is necessary. Signs will be posted at or before where continuous noise levels are at 85 dBA or greater. Various forms of hearing protection are available and must be worn in posted areas. Hearing protection must also be worn during operations that generate noise in excess of 85 dBA, such as operating machinery, drill presses and cutting machines.

39.9 FOOTWEAR

39.9.1 Personnel are required to wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole. Footwear must be ASTM/ANSI approved with recommended minimum of 75 foot-pounds compression resistance, leather, rubber or other material that offers the best protection against expected hazards (ex. acids, alkalis, solvents, petroleum derivatives, drilling fluids)

39.10 FLAME RESISTANT CLOTHING (FRC)

39.10.1 FRC will be worn in accordance with the site hazard assessment, but at a minimum, full body FRC will be required to work for some customers, when:

39.10.1.1 Personnel are located within 35' of any hydrocarbon containing field or plant equipment (ex. piping, vessels, tanks and wells).

39.10.1.2 When working in the area of reactor units or separators.

39.10.1.3 When personnel are exposed to potentially live electrical circuits.

39.10.1.4 All employee and/or supervisor identify a site-specific job and/or area with potential exposure to flash burn injuries.

39.10.2 FRC is not required as described below unless specified otherwise in local policies:

39.10.2.1 Personnel will wear FRC as the outer-most garment except when other personal protective clothing is required (ex. welders leather, personal flotation devices, etc.)

39.10.2.2 Personnel should not wear synthetic blends such as nylon, polyester, rayon, polyethylene, etc., under FRC. Natural fibers such as cottons and wools are recommended when layers are worn under FRC.

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- 39.10.2.3 Only long sleeved FRC may be worn in designated FRC areas/jobs. FRC will be worn to completely cover the torso, arms and legs (sleeves rolled down and body fully zipped or buttoned up).
- 39.10.2.4 FRC will be laundered, repaired and taken out of service per manufacturer.
- 39.10.2.5 In FRCs become saturated with flammable liquid or chemicals, the personnel exposed will withdraw to a safe area, remove saturated clothing, wash contaminated skin and change into clean clothes prior to commencing work.

39.10.3 FRC garments will comply with the requirements below:

- 39.10.3.1 If protective garment is worn over another layer of fabric, the protective fabric will exhibit an average Thermal Protective Performance (TPP) value of 4 (before and after washing). If protective garment is to be worn next to the skin, without a layer underneath, the protective fabric will exhibit an average TPP value of at least 6.
- 39.10.3.2 Fabric weight material will not be less than 4.4 oz/yd² (150 gram/m²)
- 39.10.3.3 FRC materials will comply with NFPA 2112 and tested to ASTM F 1930.
- 39.10.3.4 Optional reflective stripes will conform to the ANSI/SEA 107-1999 Level 2.

39.11 OTHER PROTECTIVE CLOTHING

- 39.11.1 No employee will wear clothing covered in full or in part with flammable or combustible materials (such as grease or oil) while engaged in hot work operations or working near an ignition source.
- 39.11.2 Affected employee will wear protective electrical insulating gloves and sleeves or other electrical PPEs they are exposed to electrical shock hazards while working on electrical equipment.
- 39.11.3 Coveralls - onshore: ZARNAS COMPANIES personnel are required to conform to onshore contractor PPE requirements, provided that it meets or exceeds the requirements defined in this procedure.
 - 39.11.3.1 Long sleeve, FRCs are required in all areas where manual activity is being performed where there is a risk for fire or exposure to heat processes.
 - 39.11.3.2 The coveralls will meet standard EN 531 A, B1, C1 or equivalent. The FRC garment is to be constructed of triple stitched seams for strength and durability and have high visibility tape stitched onto shoulders, arms and legs for increased visibility.
 - 39.11.3.3 Button up shirts and long pants, both of all cotton natural fibers, are acceptable minimum requirements for personnel clothing in areas not designated per above.
 - 39.11.3.4 Overalls, coveralls with zippers or jeans are also acceptable as long as they are all cotton, natural fiber as well. (this provides protection from cuts, abrasions, hot surfaces, etc). These can only be worn in areas where hot work operations are not being performed.

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39.11.4 High visibility vests will meet CLASS II ANSI/ISEA 107-2004 requirements.

39.12 FALL PROTECTION SYSTEM

39.12.1 Personal fall arrest systems will be compliant to the requirements of 29 CFR 1926.502. Body belts and non-locking snap hooks are not acceptable as part of a personal fall arrest system.

39.12.2 Before using personal fall arrest equipment, each affected employee will be trained to understand the application limits of the equipment and proper hook-up, anchoring and tie-off techniques. Affected employees will also be trained so that they can demonstrate the proper use, inspection and storage of their equipment.

39.12.3 Personal fall arrest systems and components subjected to impact loading will be immediately removed from service and will not be used again for employee protection until inspected and determined by a qualified person to be undamaged and suitable for reuse.

39.13 INSPECTION

39.13.1 Personal protective equipment must be sized to fit the employee including proper donning, doffing, cleaning and maintenance. It will be visually inspected before each use to assure that defective PPE is not used.

39.13.2 Defective or damaged equipment should be turned in to the safety director for replacement. The last individual to use the equipment will appropriately label it as non-usable to prevent inadvertent use by another employee.

39.14 TRAINING

39.14.1 Each employee required to use PPE will be initially trained to know the following:

39.14.1.1 When PPE is necessary

39.14.1.2 Which PPE is necessary

39.14.1.3 How to know if it fits properly

39.14.1.4 How to put on, remove, adjust and wear PPE

39.14.1.5 How to dispose of PPE

39.14.1.6 The limitations of using PPE

39.14.1.7 Proper care and maintenance of PPE

39.14.1.8 Expected useful life of PPE

39.14.2 Employee training will be certified with a written document containing employee name, date of training, subjects taught and degree of understanding acknowledged by the participant.

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39.14.3 The employee must demonstrate an understanding of the training and the ability to use PPE properly before being allowed to perform work requiring the use thereof. Retraining must be performed when one of the following conditions exists:

39.14.3.1 There are changes in the workplace which makes previous training obsolete

39.14.3.2 There are changes in the types of PPE to be used

39.14.3.3 When employees are observed using PPE in a manner which is improper or demonstrates insufficient skill or understanding

39.14.3.4 The hazard assessment is changed

39.14.4 Retraining of employees will be documented as listed above.

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PREVENTATIVE MAINTENANCE

40.1 PURPOSE

40.1.1 The purpose of this policy is to protect community assets and extend the life of equipment, enabling us to provide uninterrupted service to our clients and employees. It is our desire to maintain equipment before it fails, replace equipment before it reaches its projected life span and anticipate problems before they become emergencies. The preventative maintenance program is designed to support a safe, controlled and comfortable environment within the company by establishing programs to help ensure the operational reliability of systems, equipment and assessing and managing the risks associated with the systems and equipment malfunctions and failures.

40.2 GENERAL

40.2.1 Preventive maintenance as defined by ZARNAS COMPANIES is the utilization of planned services, inspections, adjustments and replacements designed to ensure maximum utilization of equipment at minimum cost. Preventive maintenance includes cleaning, adjustments, lubrication, minor repairs and parts replacement that are performed on scheduled frequencies according to written preventive maintenance standards. Assigned personnel at ZARNAS COMPANIES will utilize a systematic method to periodically inspect and service the various mechanical, electrical, life safety, vertical transport and electronic systems within and around the facility.

40.2.2 The emphasis of ZARNAS COMPANIES preventative maintenance program is preventive rather than reactive maintenance. A strong preventive maintenance program effectively reduces overall maintenance costs by decreasing the number of road calls and the high cost of unpredictable repairs caused by reactive maintenance. ZARNAS COMPANIES uses a graduated preventative maintenance (PM) program that is based on the manufacturer's recommendations and modified based on our experience and the local conditions we deal with in ZARNAS COMPANIES. Solid PM practices maximize useful life, are cost efficient over the life of the vehicles and equipment and ensures that our equipment remain in safe operating condition.

40.2.3 ZARNAS COMPANIES has an aggressive preventive maintenance program that schedules inspections developed for each type of equipment. The progressive PM schedule established is based upon usage and type. Each successive PM includes a higher level of maintenance inspection activity. Equipment and vehicles are inspected based on mileage and time. In addition, each piece of equipment receives an annual comprehensive inspection.

40.2.4 ZARNAS COMPANIES workers continually reviews maintenance practices to identify potential improvements to the program. This assures optimum benefits from the scheduled inspections. Engine oil analysis is an integral part of the inspection program. Oil analysis occurs differently for different fleet types. The purpose is for early identification of unusual wear thereby, acting to prevent catastrophic failures.

40.2.5 ZARNAS COMPANIES will provide for early detection of potential maintenance problems as well as proper care and routine maintenance of all systems and equipment in possession of the company. ZARNAS COMPANIES will implement a comprehensive preventative maintenance program designed to:

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- 40.2.5.1 Increase useful life of buildings and equipment
- 40.2.5.2 Ensure safety of personnel and employees using facilities
- 40.2.5.3 Prevent costly emergency repairs
- 40.2.5.4 Prevent inconvenience and expense due to unscheduled down time of facilities.
- 40.2.6 An inventory of machinery/equipment will be kept current. When new machinery or equipment is acquired, it must be added to the inventory. This policy does not include the equipment inventory, but clearly states that one has been established.
- 40.2.7 The preventive maintenance program is developed around a complete physical inventory of those mechanical, electrical, life safety, vertical transport and electronic systems as they are physically located in the buildings. This inventory will include all subsystems of major equipment. Equipment will be identified by the use of a control numbers assigned to specific pieces of equipment and entered upon the inventory record to become a permanent record of that equipment.
 - 40.2.7.1 ZARNAS COMPANIES will provide all the necessary tools, manuals, parts, supplies and manpower to perform scheduled assignments of the preventive maintenance program. ZARNAS COMPANIES will be responsible for maintenance of a recordkeeping system which includes all segments of the program and compile the data into meaningful and useful data. These records include a history of each system and subcomponents and will illustrate the actual cost and frequency of any unscheduled work performed.
- 40.2.8 All equipment will be included in the preventive maintenance program. The importance of the equipment as well as its cost, maintenance requirements and functions will determine the priority and frequency of inspections. A complete description of what to inspect in each system will include items such as temperature, pressure, voltage and other readings which are normal for that equipment. These will be included in the various preventive maintenance documents located in the main shop office and given to the mechanic assigned the task.
- 40.2.9 The preventive maintenance program will be reviewed periodically and revised as required as a result of streamlining of operations, additions to inventory or if results of the preventive maintenance program are unacceptable.
- 40.2.10 A preventative maintenance schedule should be established based on manufacturer requirements and industry standards. This policy does not include the preventive maintenance schedule, but it states that one has been established.
- 40.2.11 Defects observed in machinery or equipment will be reported to a supervisor and must be repaired or replaced before being used again.
- 40.3 AUTHORIZE, DIRECT AND CONTROL MAINTENANCE ACTIVITY AND COST**
 - 40.3.1 The maintenance manager is responsible for developing the PM schedule for each vehicle fleet and ensuring that all PM activities are completed in a timely manner and consistent with the manufacturer's recommendations.

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- 40.3.2 Throughout the PM and repair process the tasks performed by maintenance staff are under constant review by the maintenance department management and staff. This constant review is designed to ensure that review and decisions are made at the proper level of management.
- 40.3.3 Each day the maintenance manager prints and reviews the PM tracking report to identify which vehicles are due or coming due for preventative/preservation maintenance. The identified vehicles are removed from service and scheduled for work.
- 40.3.4 The work is then assigned to a preventative maintenance technician who performs the PM and completes the appropriate PM inspection form. The technician is provided with complete instructions on how to perform the PM and is required to follow those instructions to completion. Very minor repairs such as light bulbs and the securing of fasteners etc. are done during the PM process.
- 40.3.5 ZARNAS COMPANIES maintains separate PM inspection process for specific component systems such as company vehicles. These component systems each have their own PM schedules, forms and tracking reports. A maintenance supervisor is charged with the task to review the tracking reports and generates the work orders to perform the tasks.
- 40.3.6 Other needed repairs may be identified during the PM inspection. These are referred to as *PM write ups*. In addition, employees may report equipment problems. The supervisor and/or the lead person review the PM write ups and service reports. The repairs are then scheduled into the repair shop, assigned to a mechanic and completed before the equipment returns to service. A separate work order is issued for this type of repair.

40.4 IDENTIFY, TRACK AND RECORD MAINTENANCE ACTIVITY AND COST

- 40.4.1 ZARNAS COMPANIES uses a system of manual and computerized forms and reports to schedule and perform preventative/preservation maintenance PM and repairs to its fleet of vehicles. These documents include:
 - 40.4.1.1 Work orders
 - 40.4.1.2 Service orders
 - 40.4.1.3 Purchase orders
 - 40.4.1.4 Parts requests
 - 40.4.1.5 PM tracking report
 - 40.4.1.6 PM inspection forms (these vary based on type of vehicle and level of PM to be performed)
- 40.4.2 After the maintenance manager identifies which vehicles are due for PM, a work order is prepared that describes the work to be done, the account codes to be charged and instructions as to which level of PM is to be performed. All the PM labor and costs are captured under the PM code on the work order. When there is a PM write up, a new work order or multiple work orders are then generated listing those repairs. All repair labor and parts are charged to the work orders under the specific coding applicable to the individual repairs.

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- 40.4.3 The required parts and supplies are assembled by the inventory department and charged to the work order. The PM work order is checked and completed by the inventory department. The inventory department then updates the PM tracking report to show when the PM was completed.
- 40.4.4 If a repair is determined be covered under the warranty, the appropriate coding will be identified on the work order. Any warranty parts removed from the vehicle(s) are tagged with the repair information and sent to the inventory department for storage until requested by the manufacturer/vendor. The inventory department submits a warranty claim to the applicable manufacturer/vendor. The inventory department tracks warranty claims via the open warranty tracking report.

40.5 WARRANTY RECOVERY SYSTEM

- 40.5.1 ZARNAS COMPANIES operates a warranty recovery program to ensure that cost of parts and repairs on warranty covered items are recovered.
- 40.5.2 Parts and components that may have failed prematurely are returned to the inventory department. The inventory division researches the original installation date, miles of usage on the failed component and the vendor it was originally purchased from. If the part or component is covered by a warranty, it is returned to the vendor.
- 40.5.3 Authorization for warranty return and labor claims, if applicable, are obtained from the manufacturer or vendor. Information is supplied to the vendor on the circumstances of the failure, if known. The item is then returned to the vendor warranty department for repair or replacement. ZARNAS COMPANIES retains copy of the warranty claim form for tracking purposes.
- 40.5.4 When a unit is received at ZARNAS COMPANIES, it is entered into the inventory system via an inventory adjustment form that is coded as a warranty replacement. A journal voucher form is completed and forwarded to the accounting department to make the necessary accounting adjustments. Labor credit if received is applied to the appropriate cost center via a credit entry applied to the work order used when the defective part was removed.

40.6 COST ANALYSIS TOOL

- 40.6.1 ZARNAS COMPANIES's maintenance department uses a life cycle cost analysis tool as part of its decision making process when establishing and making changes to preventative maintenance intervals. This enables ZARNAS COMPANIES to analyze the cost effects of alternative practices over the life of the equipment.

40.7 FACILITY AND EQUIPMENT MANAGEMENT PLAN

- 40.7.1 In addition to the maintenance of the vehicle fleet, preventative maintenance will include scheduled inspections of the facility, both interior and exterior and all related facility equipment and elements. Maintenance staff will conduct scheduled maintenance with necessary frequency to ensure a safe work environment, maximize useful life of the facility in the most cost effective and safe manner.
- 40.7.2 Facilities maintenance includes overall environmental regulatory recordkeeping and oversight, hazardous waste disposal and manifests, timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of administration buildings, maintenance facilities and equipment.

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40.8 RECORDKEEPING

40.8.1 The preventive maintenance program will be documented as to scope and frequency of maintenance. All routine maintenance activities and the results of routine testing will be recorded for trending purposes. The shop manager will have documentation on all repair and/or replacement of components and equipment. When changes are made to the any systems, update all applicable drawings and maintenance schedules to reflect the changes. Ensure that spare parts inventories are updated for any new equipment added based on the manufacturer's recommendations.

40.8.2 Preventive maintenance performed on machinery or equipment must be documented and retained for the life of the machinery or equipment.

40.9 AUDITING/MONITORING

40.9.1 Any variances related to non-compliance with this policy will be identified by the shop manager. When a negative variance is identified, the shop manager will notify the operations manager and safety department for follow up and investigation. The investigation of significant events will be followed by additional training to help prevent their recurrence.

40.10 TRAINING

40.10.1 Training on maintenance and safety is provided to general services staff part of new employee orientation. Additional training occurs on receipt of new equipment and as needed thereafter.



FACILITY AND EQUIPMENT MAINTENANCE SCHEDULE

Scheduled Inspection Tasks

- ✓ Paint
- ✓ Floor coverings, mats
- ✓ Lighting
- ✓ Elevator
- ✓ Plumbing

Frequency

Monthly – repair as needed
Monthly – repair as needed
Monthly – replace as needed
Monthly – repair as needed
Quarterly

Building Exterior

- ✓ Roof inspection
- ✓ Gutters
- ✓ Rain drains
- ✓ Painting
- ✓ Building cleaning
- ✓ Walk way
- ✓ Parking areas
- ✓ Driveway and curbing
- ✓ Signage
- ✓ Lighting
- ✓ Lawn care and grounds
- ✓ Snow plowing
- ✓ Maintain sanitary sewer connections

Inspect and replace as needed
Inspect and repair as needed
Inspect and repair as needed
Every 10 years or as needed
Weekly
Weekly
Fix Cracks, Patch and Re-Surface
Inspect and repair as needed
Weekly – repair as needed
Weekly – repair as needed
Every 2 weeks or as needed
As needed (contract service)
Service as required

Electrical, HVAC, Fire Alarm, and Security System

- ✓ Electrical system
- ✓ Inspect and service generator
- ✓ Backup battery
- ✓ HVAC system
- ✓ Fire alarm system
- ✓ Fire and alarm system check
- ✓ Emergency lighting and exit lights
- ✓ Fire extinguishers
- ✓ Fire sprinkler system
- ✓ Security alarm system
- ✓ Inspect and service heating system
- ✓ Shop heating - overhead blowers and radiant units
- ✓ Exhaust fans

Monthly – repair as needed
Quarterly
Monthly
Bi-annually
Bi-annually – (Contractor)
Bi-annually
Monthly
Annually
Bi-annually
Bi-annually – (Contractor)
Bi-annually
Bi-annually
Quarterly

Maintenance Facility and Equipment

- ✓ Inspect and service shop
- ✓ Air compressors
- ✓ Overhead doors
- ✓ Floor coverings, mats (slip, trip hazards)
- ✓ Hot water tanks and circulating pumps
- ✓ Hazardous materials storage
- ✓ Waste oil tank
- ✓ Gas power equipment (ex. sweeper, lawn mowers, line trimmers, fork lift, salt spreader, snow blower)
- ✓ Welding equipment

Manufactures recommendations
Monthly or as needed
Quarterly – repair as needed
Weekly
Monthly
Weekly
Weekly
Manufacturer recommendations
Monthly

**ZARNAS MANAGEMENT SYSTEM
OWNED EQUIPMENT INVENTORY**



Agency/organization: _____

Date: _____

Equipment Code and Description		Condition (points)	Age (years)	Remaining Useful Life (years)	Replacement Cost (\$)	Comments <i>(If more than two lines, please attach a separate comment page)</i>
1.	05 (EXAMPLE)	100	4	21	\$150,000	
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						

**ZARNAS MANAGEMENT SYSTEM
OWNED FACILITY INVENTORY**



Agency/organization: _____

Date: _____

		Facility Code and Description	Condition (points)	Age (years)	Remaining Useful Life (years)	Replacement Cost (\$)	Comments <i>(If more than two lines, please attach a separate comment page)</i>
1.	10	(EXAMPLE) Administration Bldg.	70	30	20	\$3,000,000	
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							



ZARNAS

HEALTH, SAFETY AND
ENVIRONMENTAL
POLICIES AND PROCEDURES

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PROCESS SAFETY MANAGEMENT/CONTRACTOR RESPONSIBILITIES

41.1 PURPOSE

41.1.1 The purpose of this policy is to properly train field service personnel in the duties and responsibilities they will be performing. This is to minimize consequences of catastrophic releases of toxic substances as well as fires, explosions and other types of catastrophic incidents. PSM prevents accidental fatalities, injuries and illnesses and avoids physical property damage.

41.2 PROGRAM ELEMENTS

41.2.1 The PSM program consists of 14 elements - employee participation, process safety information, process hazard analysis, operating procedures, training, contractors, pre-startup review, mechanical integrity, hot work permits, management of change, incident investigation, emergency planning and response, compliance audit and trade secrets.

41.2.2 All elements are equally important, but some require more time than others. All elements must be met to meet the requirements of the PSM program.

41.3 PROGRAM ADMINISTRATOR

41.3.1 The operation manager is assigned the administrative responsibility for the PSM program. They will review and update the program as necessary. Copies of the written program may be obtained from our written safety and health program or from our corporate offices.

41.4 EMPLOYEE PARTICIPATION

41.4.1 This element requires a written action plan for involving employees in all PSM activities. ZARNAS COMPANIES employees are a significant ally in helping the facility to implement and maintain an effective PSM program for all employees.

41.4.2 ZARNAS COMPANIES strongly encourages employees to participate in the following:

41.4.2.1 Gathering process safety information

41.4.2.2 Conducting and developing the PSM program elements and hazard assessments as well as incident investigation findings

41.4.2.3 Obtaining access to process hazards analyses and the rest of the PSM program.

41.4.3 ZARNAS COMPANIES employees must follow all safety rules.

41.4.4 Employees are expected to maintain all equipment including all personal protective equipment in a safe and sanitary condition.

41.4.5 Employees are expected to report accidents and near misses to the foreman as soon as possible.

41.4.6 Supervisors will ensure that all the requirements of the PSM program are followed and assign responsibilities to supervisors, foreman and others as needed.



- 41.4.7 ZARNAS COMPANIES will furnish only employees who are fit and physically and mentally qualified to perform the work. Employees who have not had sufficient sleep, are unusually fatigued or impaired by the use of alcohol, drugs or medicine are not considered to be fit.
- 41.4.8 ZARNAS COMPANIES will ensure that each of its employees has the ability to read and understand, hear and understand, speak and be understood in English, as well as to write one's name in English when assigned to *safety sensitive* work. Any non-English speak person will not be assigned to a *safety sensitive* job.
- 41.4.9 Employees will be trained as required and employees must attend all training sessions. Special skills, such as welder, crane operators and electricians are required to have the proper certification.

41.5 PROCESS SAFETY INFORMATION

- 41.5.1 Certain information about a process be assembled and communicated to workers. Process safety information includes system diagrams, safe operating limits and equipment information.
- 41.5.2 The information compiled about chemicals is comprehensive enough for accurate assessments of the fire and explosion characteristics, reactivity hazards, the safety and health hazards to workers and the corrosion and erosion effects on the process equipment and monitoring tools.
- 41.5.3 Information acquired by the project manager when operations fall under the PSM program:
 - 41.5.3.1 Hazards of each highly hazardous chemical used in each process. Data must cover toxicity, PELs, physical data, reactivity data, corrosivity data, thermal and chemical stability data and hazardous effects of inadvertent mixing of different materials that could foreseeably occur.
 - 41.5.3.2 Technology of processes which must include flow diagrams, process chemistry, maximum intended inventory, safe UEL and LELs, evaluation of the consequences of deviations including those affecting the safety and health of employees.
 - 41.5.3.3 Equipment - must include materials of construction, electrical classification, ventilation system design, piping and instrumental diagrams, codes and systems employed.
- 41.5.4 We ensure equipment which is utilized is designed in accordance with standards or practices that are expected. (Ex. explosion proof equipment, non-sparking tools, intrinsically safe instruments)
- 41.5.5 The host company will conduct safety meetings at appropriate intervals to assure all employees are fully informed of potential hazards. A tailgate safety meeting will be conducted any time there is a change in the work assignment or a new hazard is present.

41.6 PROCESS HAZARD ANALYSIS

- 41.6.1 Process hazard evaluations focuses on equipment, instrumentation, utilities, human actions (routine and non-routine) and external factors that might impact the process.
- 41.6.2 This element is a systematic approach used to identify, evaluate and control the hazards. Process hazards analysis (PHA) can help determine where problems may occur in a process, so corrective action can be taken to make a safer operation. PHA must be conducted as soon as possible.



- 41.6.3 Our process hazard analysis, sometimes called a process hazard evaluation is an organized and systematic effort identify and analyze significance of potential hazards associated with the processing or handling of highly hazardous chemicals.
- 41.6.4 The employer company is responsible for the safety and health of its employees at the jobsite. The jobsite foreman will thoroughly familiarize himself with the client's operations at the jobsite, including operations which may pose a personnel hazard. The jobsite foreman will also thoroughly familiarize himself with the client's safety policies and with the client's alarm system at the jobsite. The foreman will be responsible for conducting a thorough examination of the jobsite to prior to performing any work. The foreman will complete the *Jobsite Safety Inspection* form or a *Jobsite Safety Analysis (JSA)*. The jobsite must be safe for the proposed before work commences.
- 41.6.5 The foreman will advise the client representative of any unique hazards presented by the contract employee's work or any hazards found by the employee's.
- 41.6.6 The project manager, client representative and employees who, by qualifications are familiar with the appropriate operations perform our process hazard analysis and provide valuable input.

41.7 OPERATING PROCEDURES

- 41.7.1 Operating procedures must be written for all processes, including startup, normal operation, normal shutdown and emergency shutdown. These procedures must be communicated to all employees.
- 41.7.2 Operating procedures describe tasks to be performed, data to be recorded, operating conditions to be maintained, samples to be collected and safety and health precautions to be taken. ZARNAS COMPANIES procedures are technically accurate, understandable to employees and periodically revised to reflect current operations.
- 41.7.3 Because of the unique nature of our operations, our procedures are tailored to the specific operations and conditions of our clients. These operating procedures will cover operating phases, operating limits, consequences of deviation and steps required to correct or avoid deviation and safety and health considerations.
- 41.7.4 Operating procedures are reviewed for the facility which work may be being performed at. These procedures will be reviewed and followed where applicable in addition to performing our own process hazard analysis per our hazard assessment process.
- 41.7.5 The project manager is responsible for reviewing the operating procedures to make sure they are current and accurate and also reviews operating procedure changes that result from changes in process chemicals, technology, equipment and the facility. This will include activities such as procedures to ensure piping and other vessels are free of chemicals and other reactive or hazardous materials which may be encountered when performing the scope of our work. The project manager is responsible for certifying the operating procedures each year.
- 41.7.6 ZARNAS COMPANIES procedures describe safe work practices which limit employee and contractors' exposure to covered process areas and control hazards in situations such as lockout/tagout, confined space entry, opening process equipment or piping and control over entrance into a facility by maintenance, contractor, laboratory or other support personnel. The



project manager is responsible for performing a pre-startup safety review for new facilities and modified facilities when the modification changes the process safety information.

41.7.7 ZARNAS COMPANIES will provide employees with energy lockout devices, (ex. lock to isolate energy sources) to protect from injury while working in, on or around equipment during repair or maintenance due to unexpected startup or energization. ZARNAS COMPANIES will follow host company lockout/tagout procedure.

41.7.8 The foreman is responsible for obtaining a confined space entry permit prior to entering a confined space and for obtaining any and all work permits that may be required for each job.

41.8 TRAINING

41.8.1 The training program must develop the knowledge, skills and attitude for working safely and must include an overview of the process, its potential hazards, relevant operating procedures and safe work practices. This element also requires initial training and periodic refresher training.

41.8.2 All employees, including maintenance crews and contractors who are involved with highly hazardous chemicals need to fully understand the hazards of chemicals and processes they work with for protection of themselves, fellow employees and citizens of nearby communities.

41.8.3 Training in hazard communications helps employees be more knowledgeable about the chemicals they work with as well as familiarizing them with SDSs. Additional training is covered such as operating procedures and safe work practices, emergency response, safety procedures, routine and non-routine work authorization activities, incident reporting and other areas pertinent to process safety and health.

41.8.4 The safety director trains employees. They train new employees at the time of hire and when new hazards are introduced. Records of training are maintained by the safety director and forwarded to corporate office for retention.

41.8.5 All training and retraining records contain the identity of the employee, the date of training and the topics covered verify that they understood their training.

41.8.6 Contract employees must be trained in the work practices necessary to perform their job. ZARNAS COMPANIES will ensure that employees receive safety training regarding potential hazards of the job prior to commencement of work. All training will be documented.

41.9 CONTRACTORS

41.9.1 Contractors and their employees must be informed about the hazards associated with any process that they are working on or near. They must also be properly trained to do their job safely and according to the plant's safety regulations.

41.9.2 Occasionally subcontractors will perform work in and around processes that involve highly hazardous chemicals. Our goal is to hire subcontractors who accomplish the desired job tasks without compromising the safety and health of employees at the facility.



- 41.9.3 ZARNAS COMPANIES periodically evaluates contractor's safety performance in accordance with our contractor safety plan located in our written HSE policies and procedures. We keep contract employee injury and illness logs related to contractor's work.
- 41.9.4 ZARNAS COMPANIES informs contract employers of the known potential fire, explosion or toxic release hazards related to the subcontractor's work and processes through safety meetings. This includes a review of the SDSs for the chemicals, a review of all applicable safety requirements, review of the PHA and hot work is not allowed without the use of a hot work permit.
- 41.9.5 ZARNAS COMPANIES provides an explanation of the emergency action plan to contract employers during safety meetings and provide a copy of procedures to follow in an emergency.
- 41.9.6 ZARNAS COMPANIES ensures that the contract employer advises our organization of any unique hazards presented by the subcontract employer's work or of any hazards found by the contract by establishing a clear line of communication. Safety concerns are addressed as a part of pre work meetings held at the beginning of every shift.
- 41.9.7 Contractor employees will abide by safe work practices during operations such as lockout/tagout, confined space entry, opening process equipment or piping and controls over entrance to facility.
- 41.9.8 Contractors will instruct the employer of any unique hazards presented by their work or of any hazards found by the contract employer's work.

41.10 PRE-STARTUP REVIEW

- 41.10.1 A review of key safety considerations and operator training that is done before a new process is started up. A pre-startup review is also required for modified processes that require a change in plant design or process safety information.
- 41.10.2 The pre startup safety review is to ensure all safety and environmental issues identified during the previous HSE reviews, PHAs or MOCs have been satisfactorily resolved and that the process is safe to start. It ensures the design concepts identified in the HSE reviews have been implemented.
- 41.10.3 Pre-startup review ensures all applicable operating, safety, emergency and maintenance procedures, training and documentation have been completed prior to startup. These procedures may need to be updated/refined after startup.
- 41.10.4 Pre-startup review ensures construction and equipment is in accordance with design specifications and a safety checklist is completed before startup is prepared.
- 41.10.5 For changes involving the introduction of a highly hazardous chemical, ensure that the above items have been completed prior to the introduction of highly hazardous chemicals.

41.11 MECHANICAL INTEGRITY

- 41.11.1 This ensures the ongoing integrity of process equipment. It requires testing and inspections to eliminate leaks or releases of dangerous material and potential sources of ignition that could lead to fires or explosions.



- 41.11.2 Process equipment integrity maintenance procedures are designed to ensure that process equipment receives appropriate, regularly scheduled maintenance. It ensures that equipment is designed, installed, maintained and operated properly. The goal is ongoing mechanical integrity rather than breakdown maintenance.
- 41.11.3 The maintenance procedures that preserve the integrity of each piece of equipment and instrumentation are accomplished utilizing a preventative maintenance program.
- 41.11.4 ZARNAS COMPANIES ensures that employees involved in maintaining the ongoing integrity of process equipment are trained in the proper procedures required by the PSM standard.
- 41.11.5 ZARNAS COMPANIES performs inspections and tests on process equipment. These tests are documented and include the following information:
 - 41.11.5.1 Date of inspection or test
 - 41.11.5.2 Description of the inspection or test performed
 - 41.11.5.3 Name of person who performed the inspection or test
 - 41.11.5.4 Results of the inspection or test
 - 41.11.5.5 Serial number or other identifier of the equipment that was inspected or tested
- 41.11.6 Tests and inspections are performed in accordance with the preventative maintenance program in place at facilities which we may work.
- 41.11.7 Our facility ensures that new equipment, maintenance materials, spare equipment and parts meet design and material specifications in order to protect against the use of improper materials.
- 41.11.8 The project manager is responsible for the quality assurance including ensuring that proper materials of construction are used, that fabrication and inspection procedures are proper and that installation procedures recognize field installation concerns.
- 41.11.9 ZARNAS COMPANIES will supply and be responsible for the condition and suitability of all equipment and tools necessary to perform the work. The foreman is responsible for conducting an audit of all tools and equipment prior to starting a job.

41.12 HOT WORK PERMITS

- 41.12.1 This element requires the use of a hot work permits to certify that hot work can be done safely.
- 41.12.2 The foreman will obtain a hot work permit from the client when using portable electric driven tools, welding, sand blasting, opening electrical enclosures, etc., in an operating area or using any other equipment that might be a source of ignition for combustible mixtures. This equipment will be immediately shutdown in an emergency or when requested by a client's representative.
 - 41.12.2.1 Contract employees will not perform hot work until a hot work permit is obtained from employer. The permit will document that the fire prevention and protection requirements in have been implemented prior to beginning the hot work operations.



41.12.3 ZARNAS COMPANIES will furnish a trained employee, with fire extinguisher in the work area for certain work as required on a hot work permit and remain on duty 30 minutes after the hot work is completed. This employee must know how to sound the alarm in the event there is an emergency.

41.12.4 The foreman is responsible for fire prevention in the work area.

41.12.5 Smoking permitted only in designated areas.

41.13 MANAGEMENT OF CHANGE

41.13.1 This element ensures that changes to process chemicals, technology, equipment and facilities are analyzed for their impact on health and safety. The analysis of such changes can then be used to determine necessary modifications to safety information, procedures and training.

41.13.2 PSM changes include all modifications to equipment, procedures, raw materials, processing conditions other than *replacement in kind* and temporary changes.

41.13.3 The general procedures to manage any changes (except for replacements in kind) to process chemicals, technology, equipment, procedures and facilities are to conduct a PHA with the following perspectives as a basis for the process hazard analysis:

41.13.3.1 Technical basis for a proposed change

41.13.3.2 Impact of a change on safety and health

41.13.3.3 Modifications to operating procedures

41.13.3.4 Necessary time period for a change

41.13.3.5 Authorization requirements for a proposed change

41.13.4 ZARNAS COMPANIES ensures employees involved in operating a process, maintenance and subcontractors whose job tasks are affected by a change in the process are informed of and trained on the change prior to process start-up or affected part of the process.

41.14 INCIDENT INVESTIGATION

41.14.1 This element requires the investigation of every incident that results in or could have resulted in a catastrophic release. An investigation is necessary to identify the cause of the incident and provide the basis for corrective action.

41.14.2 Incident investigation is identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. ZARNAS COMPANIES intends to learn from past experiences and avoid repeating past mistakes.

41.14.3 Incidents that need to be investigated are the types of events which result in or could reasonably have resulted in a catastrophic release. Some of the events could be *near misses*, meaning that a serious consequence did not occur, but could have.

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- 41.14.4 The project manager is responsible for incident investigations. Employees and subcontractors are notified to immediately report all injuries, illnesses and incidents to the project manager. Incident investigations must be initiated within 24 hours to obtain accurate information to assist in the identification of root causes and contributing factors that causes the incident.
- 41.14.5 All incident investigation reports (if any) within the last five years are attached to this PSM program and/or described here. The reports indicate at least the following:
 - 41.14.5.1 Date of the incident
 - 41.14.5.2 Description of the incident
 - 41.14.5.3 Recommendations resulting from the investigation
 - 41.14.5.4 Date the investigation began
 - 41.14.5.5 Factors that contributed to the incident
- 41.14.6 ZARNAS COMPANIES promptly addresses the incident report findings and recommendations. A report will be prepared at the conclusion of the investigation. The report will be reviewed with all affected personnel. The report will be retained for 5 years.
- 41.14.7 ZARNAS COMPANIES ensures that all affected personnel, whose job tasks are relevant to an incident finding (including subcontract employees where applicable), review the report to prevent or reduce the likelihood of reoccurrence.
- 41.14.8 ZARNAS COMPANIES will provide full reports of incidents involving persons or property on the client's jobsite. All *near miss* incidents will be investigated and reported. The client will be given a copy of all *near miss* reports. A *near miss* is any incident that could have caused serious injury or significant property damage as an accident.
- 41.14.9 OSHA requires an investigation of each incident which resulted in or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.
- 41.14.10 An incident investigation will be initiated promptly, no later than 48 hours following the incident.
- 41.14.11 An incident investigation team will be established and consist of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.

41.15 EMERGENCY PLANNING AND RESPONSE

- 41.15.1 This element requires facility to establish and implement an emergency action plan to deal with a release of highly hazardous chemicals. Operators and other personnel should know exactly what to do to minimize the consequences of an emergency.
- 41.15.2 ZARNAS COMPANIES employees must be familiar with the client's emergency plan, whom to contact and where to go if an emergency occurs. The employer provides this information and keeps a contract employee injury and illness log.



- 41.15.3 The foreman will promptly report any fires on the client's property to the host company.
- 41.15.4 ZARNAS COMPANIES is responsible for providing emergency medical and first aid care for its employees and for the follow up care which may be necessary.
- 41.15.5 The host company will meet federal and state occupational safety and health first aid requirements. We will have sufficient number of trained first aiders at each job and adequate first aid supplies. The jobsite foreman is responsible for ensuring these requirements are met.
- 41.15.6 ZARNAS COMPANIES will train employees on emergency alarms and procedures. It is important to understand the necessity of shutting down all sources of ignition and leaving the area immediately when an emergency alarm is sounded.
- 41.15.7 If a fire is too large or if attempts at extinguishing fail, employees should warn others in the area and evacuate the danger area to an upwind position and take a headcount. If a muster area has not been identified by the client, then the foreman will designate a place and take a headcount. The office will also have a roster of all employees that are assigned to a jobsite. The office will be informed in the event of an emergency that requires employee to evacuate an area.
 - 41.15.7.1 Immediately notify the client representative of the situation.
 - 41.15.7.2 If a fire does not jeopardize personal safety, trained employees should attempt to extinguish a fire at the worksite during the incipient stage, after the alarm was given.
 - 41.15.7.3 ZARNAS COMPANIES employees are not expected to perform duties relating directly to controlling a fire but may be called upon to provide support services (hauling equipment, assisting injured personnel).
- 41.15.8 For major release of flammable vapors or gases, employees are to immediately notify supervisor, then shut down all sources of ignition under their control.
 - 41.15.8.1 The foreman must immediately notify the client representative of the situation.
 - 41.15.8.2 Immediately evacuate the danger area to an upwind position and assemble. The assemble point (place of safe refuge) should be far enough from the source release to remain safe should the vapors ignite.
 - 41.15.8.3 Continue monitoring the wind direction and stay upwind at all times. All gas releases will be assumed to contain toxic gas.
- 41.15.9 Do not re-enter until the emergency is under control and given clearance to re-enter.
- 41.15.10 ZARNAS COMPANIES's emergency action plan addresses what actions our employees are to take when there is an unwanted release of highly hazardous chemicals. Our emergency action plan is located in our written HSE policies and procedures.

41.16 COMPLIANCE AUDIT

- 41.16.1 This ensures an effective PSM system is in place and is working. The compliance audit provides a systematic way of verifying compliance with a PSM program and identifying problems.



41.16.2 Employers are required to respond to the audit findings in a timely manner.

41.16.3 At least every three years, The project manager completes a compliance audit which evaluates and certifies compliance with the PSM program to verify that procedures and practices developed in the PSM are adequate and are being followed. In this way, our facility is able to focus on areas of continuing concern that surfaced through the audits.

41.17 TRADE SECRETS

41.17.1 This element requires access to all necessary information for competing the other thirteen elements of the standard without regard to trade secret status.

41.17.2 ZARNAS COMPANIES ensures all employees and subcontractors that are responsible for compiling process safety information, those assisting in the development of the process hazard analysis, those responsible for developing operational procedures and involved in incident investigation, emergency planning and compliance audits are provided with information needed to conduct such activities without regard to possible trade secret status. In cases where trade secrets may be disclosed, confidentiality agreements not to disclose such information may be required.

40.17.3 Employees must respect the confidentiality of any *trade secret* information from the release of process safety information to them.

RESPIRATORY PROTECTION

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RESPIRATORY PROTECTION

42.1 PURPOSE

- 42.1.1 The purpose of this policy is to protect employees from respiratory hazards, according to the requirements of 29 CFR 1910.134. Respirators are to be used only where engineering control of respiratory hazards is not feasible, while engineering controls are being installed or emergencies.

42.2 RESPONSIBILITIES

42.2.1 ZARNAS COMPANIES

- 42.2.1.1 Ensure that employees are medically authorized to wear respiratory equipment.
- 42.2.1.2 Provide respiratory protection at no cost to the employee.
- 42.2.1.3 Require affected contractors to abide by the provisions of the company's policy in all areas where it exceeds those employee safety provisions of his own program.
- 42.2.1.4 Routinely evaluate the work environment to assess effectiveness of respiratory equipment and provide required respiratory protection to safely perform the task.
- 42.2.1.5 Provide medical treatment to employees overexposed to hazardous substances.

42.2.2 Supervisors

- 42.2.2.1 Consult with management whenever there is a question regarding the proper respiratory protection to be used in a work environment.
- 42.2.2.2 Ensure employees remain up to date with required training.
- 42.2.2.3 Evaluate worksite to determine if respiratory protection is required and if so, the type.
- 42.2.2.4 Remain aware to changes in working conditions so that the level of PPE in use is consistent with that which is required under current conditions.
- 42.2.2.5 Enforce prescribed disciplinary measures for policy violations.
- 42.2.2.6 Suggest and initiate engineering and work practice controls to lessen the degree of potential exposure to employees under his/her supervision.
- 42.2.2.7 Ensure respirators are maintained according to company policy and that employees comply with proper use criteria, according to manufacturer recommendations.

42.2.3 Employees

- 42.2.3.1 Follow all verbal and written instructions with regard to safe work practices and compliance to the company's written program requirements.
- 42.2.3.2 Maintain awareness to areas at jobsite where respiratory equipment is required.

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- 42.2.3.3 Use, clean and regularly inspect respiratory equipment in accordance with program and manufacturer instructions.
- 42.2.3.4 Check respirator fit each time before a respirator is put to use (positive and negative pressure checks).
- 42.2.3.5 Properly store respiratory equipment after use.
- 42.2.3.6 Know and understand emergency actions while on the jobsite, in accordance with company/customer requirements; inclusive of individual responsibilities, assembly areas emergency respirator stations, egress routes, alarms, etc.
- 42.2.3.7 Immediately notify supervisors when a respirator has malfunctioned or does not offer the proper degree of protection from exposure.
- 42.2.3.8 Understand the signs, symptoms and consequences of exposure the hazard.
- 42.2.3.9 Exercise the buddy system in all phases of work involving ZARNAS COMPANIES personnel and any employee of the customer or other contractors who work in close proximity to where operations will be ongoing.
- 42.2.4 Safety director/Program administrator
 - 42.2.4.1 Must be the program administrator and knowledgeable of the complexity of the program, properly trained and able to evaluate the *Respiratory Protection Program* routinely to monitor its effectiveness as well as employee compliance.
 - 42.2.4.2 Responsible for ensuring that employee training is conducted and updated in accordance with state, federal and customer requirements.
 - 42.2.4.3 Maintain training, exposure, monitoring and related records and will make such records available for employee review upon their request (except for exposure monitoring data which needs to be communicated immediately upon assimilation).
 - 42.2.4.4 Respond to customer questionnaires and inquiries regarding the program.
 - 42.2.4.5 Support management efforts to implement the program in the workplace.

42.3 GENERAL PROVISIONS

- 42.3.1 Employees are required to use provided respiratory protection in accordance with training and instruction received and as the manufacturer recommends with regard to use and limitations.
- 42.3.2 ZARNAS COMPANIES will provide adequate respiratory protection to all of its affected employees who will likely work in areas where the potential of exposure to respiratory hazards exist or where respiratory protection is recommended for use in the respective work environment. Existing respirator use conditions will be evaluated with degree of protection upgraded or employees removed from the contaminated area as appropriate.

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- 42.3.3 ZARNAS COMPANIES recognizes that most respiratory exposure hazards are readily detectable using appropriate direct reading test instrumentation. Some respiratory hazards that originate from tasks conducted by ZARNAS COMPANIES will require assessments prior to employee arrival to the jobsite and appropriate respiratory protection be provided.
- 42.3.4 ZARNAS COMPANIES will require respiratory protection be provided that are applicable and suitable for purpose intended, be worn when engineering controls are not feasible or during emergency situations with high exposure and any of the below exists.
 - 42.3.4.1 Presence of any gas is detected above the OSHA permissible exposure limit (PEL) for that gas or substance.
 - 42.3.4.2 Existence of vapors, mists and/or fumes in the work environment is evident.
 - 42.3.4.3 When exposure to metal dust and fragments exists as a result of machinery.
 - 42.3.4.4 Activities of other contractors that expose employees to respiratory hazards.
- 42.3.5 ZARNAS COMPANIES will require contractors to provide respiratory protection for his own employees that will be exposed to respiratory hazards coincidental to performing work with the company. ZARNAS COMPANIES will notify the contractor when such need for respiratory protection exists.

42.4 FIT TEST

- 42.4.1 ZARNAS COMPANIES is required to ensure employees pass qualitative fit test (QLFT) or quantitative fit test (QNFT) before initial use, if a different respirator is used and annually. SARs are required to be fit tested as well.
- 42.4.2 ZARNAS COMPANIES will repeat qualitative fit testing if:
 - 42.4.2.1 Employee experiences a change in weight of 20 or more pounds.
 - 42.4.2.2 Employee has sustained significant facial scarring in the area of the sealing edge.
 - 42.4.2.3 Employee has had dental work performed which brought on significant changes to employee facial structure (ex. multiple extractions, prosthetic devices, dentures).
 - 42.4.2.4 Employee has had reconstructive facial surgery.
 - 42.4.2.5 Employee has been prescribed eyeglasses to wear since the last test.

42.5 MEDICAL EVALUATION

- 42.5.1 ZARNAS COMPANIES will rely upon administering physician determinations regarding:
 - 42.5.1.1 Whether the employee has physical or health conditions (acute or chronic), which would render the employee unable to wear a respirator.

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42.5.1.2 How the facility complied with the requirements of ANSI Z88.2, Appendix A4, *Physiological and Psychological Limitations for Respirator Wearers*. This determines if the employee may enter into a panic stricken state once subjected to the limitations inherent to respirator user (ex. claustrophobia, asthma attacks, etc.)

42.5.1.3 The submittal of written medical certification confirming the employee's ability to wear respiratory equipment under working conditions.

42.5.2 ZARNAS COMPANIES will use services of a predetermined medical/treatment facility to provide initial medical evaluation certification for respirator use by employees, prior to fit test, confidentially, during normal working hours, at no cost to the employee and assist the company with making determinations regarding the potential or continued use of respirators by employees. Employees will be given a chance to discuss results with medical staff.

42.5.3 ZARNAS COMPANIES requires an annual review of employee's medical status if the employee is required to wear a respirator in a controlled hazardous environment routinely as a part of normal job functions, the employee has had a previous exposure to a contaminant and was subsequently cleared by a medical professional to resume normal duties which are subject to exposure to contaminants coincidental to work activities or if the employee has had an unprotected exposure to a contaminant and annual testing is part of a follow up program.

42.6 SPECIAL PROVISIONS AND RESTRICTIONS FOR USE

42.6.1 Employees will be restricted from wearing a respirator if:

42.6.1.1 The employee has facial hair growth which gets between the skin and the sealing edge of the respirator face piece.

42.6.1.2 The employee is wearing clothing to the extent that it interferes with the satisfactory fit of the respirator. When such is the case, and the apparel cannot be altered in such a way that it no longer prohibits successful face piece sealing or the clothes cannot be removed, then the employee will not be allowed to wear a respirator.

42.6.1.3 The employee exhibits difficulty in breathing during fit testing. If such is the case, the individual will be referred to the company's treating physician to determine the cause and determine if continued respirator use by the employee is feasible.

42.6.2 ZARNAS COMPANIES will not allow employees to wear contact lenses in any environment where an airborne concentration of contaminant above the OSHA permissible exposure limit (PEL) is present.

42.7 RESPIRATOR SELECTION

42.7.1 ZARNAS COMPANIES will evaluate all work conditions to which its employees may become exposed, in efforts to provide within reason, a work environment that is free of airborne respiratory hazards. When ZARNAS COMPANIES cannot fully eliminate a workplace respiratory hazard, then it will provide to employees, at no cost, respiratory protective equipment appropriate for the type of hazard exposed.

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- 42.7.2 Respirators which will comply in all respects with ANSI requirements. Respirators will be NIOSH certified for the atmosphere in which they will be used.
- 42.7.3 ZARNAS COMPANIES will assign supervisors the responsibility to monitor and evaluate use and effectiveness of respirators and cartridges in the work environment.
- 42.7.4 A dust mask for nuisance dusts and airborne particles is acceptable for use in the shop or other areas where the potential for exposure to low level mists and nuisance dusts hazards exist.
- 42.7.5 Employees are responsible for selecting the respirator which offers the best fit and comfort. Employees may select from a group of respirators in an effort to find a good fit.
- 42.7.6 When employees select a respirator for use in the work environment, they will use only that respirator on which they have been tested and certified. They will be responsible for the maintenance and upkeep of the respirator face mask until such a time as the expiration date for continued effectiveness of the mask has expired or the mask has experienced a reduction in the protection factor (ex. detected by taste, smell and/or signs and symptoms, etc.).

42.8 TYPES OF RESPIRATORS

- 42.8.1 Supplied-air respirators (SAR) - Supply air, never oxygen, to a face piece via a supply line from a stationary source. SARs are available in positive pressure (pressure demand-give air only when you inhale, or continuous flow) and negative pressure (draws air into the face piece as a result of your own breathing).
- 42.8.2 Air-purifying respirator (APR) - Does not supply breathable air, but only filters impurities by drawing them through a cartridge during normal breathing. These types of respirators cannot be used in atmospheres where there is a lack of oxygen sufficient enough to sustain normal breathing or where the concentration of gases or vapors exceeds nuisance level of detection.
- 42.8.3 Self-contained breathing apparatus (SCBA) - Supplies air to the user from a cylinder usually located on the individual's back. Air supply is limited and the time the supply lasts is contingent upon a number of factors. These units may be used for emergency use and pre-job surveys.

42.9 RESPIRATOR CARTRIDGE CHANGE SCHEDULE

- 42.9.1 Some respirator cartridges are equipped with End of Service Life Indicator (ESLI) that provides a visible indicator that shows when the cartridge is saturated and therefore must be replaced.
- 42.9.2 In the absence of an ESLI on the respirator cartridge, ZARNAS COMPANIES will provide a respirator cartridge change schedule.
- 42.9.3 Cartridges are to be changed immediately whenever:
 - 42.9.3.1 They are not intended for protection against the contaminant to which the employee is being exposed or potentially exposed to.
 - 42.9.3.2 They do not adequately fit the face piece to which they are being attached.

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- 42.9.3.3 When employees experience a breakthrough under existing conditions and contaminants are getting through the mask.
- 42.9.3.4 No NIOSH or OSHA certification label appears on the cartridges.
- 42.9.4 Cartridges are to be changed during routine usage whenever:
 - 42.9.4.1 They are visibly contaminated with foreign material or dust.
 - 42.9.4.2 The user cannot breathe as freely through the cartridges.
 - 42.9.4.3 The user feels as though he *tastes* the contaminants through the cartridges.
 - 42.9.4.4 Cartridge used more than 32 hours in one week period under normal conditions.
 - 42.9.4.5 Whenever the user requests a new one.
- 42.9.5 ZARNAS COMPANIES will provide appropriate surveillance, ensure employees leave the area to change cartridges or if they detect a leak or resistance.

42.10 CLEANING, MAINTENANCE AND STORAGE

- 42.10.1 Employees are required to maintain respirators in good repair and proper working condition. Any respiratory which does not function properly or is worn beyond replacement parts, should be turned in to the supervisor for issuance of another one.
- 42.10.2 Employees will promptly remove damaged or defective respirators and discard them or have them repaired. Repair or adjustment to a respirator will be made using only the respirator manufacturers' NIOSH approved parts. Repairs will only be made according to the manufacturers' specifications.
- 42.10.3 ZARNAS COMPANIES will designate the area near the entrance into the shop area as the designated respirator storage area. Respirators will be placed in an air tight container and stored in such a manner that they are not exposed to moisture, heat, oils machines, grease or direct sunlight.
- 42.10.4 Respirators must be stored in such a way that the face piece and other respirator parts are not distorted. Respirators will not be stored in areas, such as tool boxes or in lockers, without being placed in a secondary container to prevent face piece distortion.
- 42.10.5 Respirators will be cleaned and disinfected:
 - 42.10.5.1 As often as necessary to be maintained in a sanitary condition for respirators that have been issued for the exclusive use of an employee.
 - 42.10.5.2 After each use for respirators intended for emergency use.
 - 42.10.5.3 After each use for respirators intended for fit testing and training use.
- 42.10.6 Respirators should be made sanitary and cleaned in warm water using a mild liquid detergent.

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- 42.10.7 Respirators should be dried with a clean soft cloth and placed in the re-sealable bag for storage.
- 42.10.8 Respirators are to be stored in a re-sealable plastic bag in the designated storage area in the shop.
- 42.10.9 Respirators which cannot be cleaned must be turned in to the safety director for replacement and disposal. The employee will be issued a replacement.

42.11 RESPIRATOR INSPECTION

- 42.11.1 Respirators are to be inspected prior to each use. Emergency use respirators must be inspected at least monthly and as recommended by the manufacturer.
- 42.11.2 Respirators should be visually inspected by the employee who will wear it, for cracks, rips, hard or brittle areas and damaged port filters.
- 42.11.3 Respirator inspection items should include:
 - 42.11.3.1 Tightness of connections
 - 42.11.3.2 Condition of face piece, straps, and all other parts and filter and cartridge elements.
 - 42.11.3.3 Condition of the exhalation and inhalation valves.
 - 42.11.3.4 Pliability and flexibility of rubber parts. Deteriorated rubber parts must be replaced. Unused rubber parts should be worked, stretched and manipulated with a massaging action, according to manufacturer's specifications.
 - 42.11.3.5 If using a full face respirator, the condition of lenses should be checked. Lenses must be tight in the face piece. Scratched or damaged lenses must be replaced
- 42.11.4 Respirators which are routinely used will be inspected before and after each use, by the employee who uses it or at least on a daily basis when use is infrequent.
- 42.11.5 Random inspections will be conducted by the safety director to ensure that respirators are properly selected, fitted, used, cleaned, maintained and stored.

42.12 EMERGENCY USE

- 42.12.1 Each respirator has limited ability to protect health. During emergency entry there is neither time nor opportunity to evaluate degree of exposure, only SCBA operating in the pressure demand mode will be used. SCBAs are approved for use in IDLH atmospheres. After the type and degree of breathing hazards are evaluated, other respiratory equipment may be recommended.
- 42.12.2 ZARNAS COMPANIES employees will not knowingly work in IDLH atmospheres or atmospheres where supplied air respirators are used.
- 42.12.3 Respirators provided only for escape from IDLH atmospheres will be NIOSH certified for escape from the atmosphere in which they will be used.

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- 42.12.4 All oxygen deficient atmospheres will be considered IDLH.
- 42.12.5 Employees are restricted from using *canister-type* respirators due to the limited amount of vapors and gases they filter out.
- 42.12.6 Ensure that emergency use respirators are inspected at least monthly and in accordance with manufacturer's recommendations and certify the respirator by documenting inspection dates, the inspector's identification, findings and remedial actions.
- 42.12.7 Check for proper function before and after each use.
- 42.12.8 Emergency escape only respirators will be inspected before bringing onto the worksite for use.
- 42.12.9 Unless the respirator manufacturer specifies otherwise, emergency respirators will be stored in compartments that are clearly marked as containing emergency respirators, which will be kept accessible to the work area.
- 42.12.10 The storage compartment for each emergency respirator will be labeled or tagged with the most current inspection information.

42.13 RECORDKEEPING

- 42.13.1 ZARNAS COMPANIES is required to establish, retain and make available written information regarding medical evaluations, fit testing and the respirator program in accordance with 29 CFR 1910.1020.
- 42.13.2 ZARNAS COMPANIES will retain training records for duration of employment plus five years. Records will include fit testing as well as classroom instruction.
- 42.13.3 ZARNAS COMPANIES will retain employee exposure and medical records for a period of not less than 30 years after the initial date.
- 42.13.4 ZARNAS COMPANIES will maintain exposure analysis results and related test documentation for a period of not less than five years.
- 42.13.5 ZARNAS COMPANIES will maintain records at corporate office. The safety director will be responsible for record maintenance.

42.14 TRAINING

- 42.14.1 Employees who will work under conditions where respirator may be required will receive training at least annually, prior to assignment to a position or job where respiratory protection is required or whenever a new type of respirator is placed in used or the employee demonstrates a lack of knowledge/training regarding the proper use of the respirator.
- 42.14.2 Training topics will include, but not be limited to:
 - 42.14.2.1 Why respirator use is necessary/Reason for selecting a particular type of respirator

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- 42.14.2.2 Nature of the respiratory hazard and consequences of not fitting, using and maintaining the respirator properly
- 42.14.2.3 Capabilities and limitations of the selected respirator
- 42.14.2.4 How to inspect, put on and remove and check the seals of the respirator
- 42.14.2.5 Respirator maintenance and storage requirements
- 42.14.2.6 How to use the respirator effectively in emergency situations, including when the respirator malfunctions
- 42.14.2.7 How to recognize medical signs and symptoms that may limit or prevent the effective use of the respirator
- 42.14.3 Employees will receive training at no cost to the employee during new hire orientation, as part of new employee field orientation prior to the actual start of performing work activities for the company or within the first 90 days of employment or prior to assignment to a position or job, where respirator use is required, whichever occurs first.
- 42.14.4 Employees will receive training for specific job related hazards of a non-routine nature, through safety meetings and by postings in work areas where respiratory protection is required.
- 42.14.5 All training will be documented and maintained by the safety director.



RIGGING/MATERIAL HANDLING

43.1 PURPOSE

43.1.1 The purpose of this policy is to communicate the requirements for rigging, equipment relevant to planning, inspection, examination and marking of lifting equipment, maintenance and recordkeeping.

43.2 RESPONSIBILITIES

43.2.1 Supervisor

- 43.2.1.1 Ensure operations are in compliance with relevant rules and regulations.
- 43.2.1.2 Ensure personnel are properly trained for their position and responsibilities.
- 43.2.1.3 Provide appropriate equipment to secure safety and quality performance.
- 43.2.1.4 Conduct maintenance according to schedule
- 43.2.1.5 Hold inspections at appropriate intervals, this includes giving requirements for inspection, maintenance, removal of unsuitable equipment and recordkeeping.

43.2.2 Employee

- 43.2.2.1 Understand and comply with applicable procedures including but not limited to risk assessment, fall protection, lift planning and stop work authority.

43.2.3 Maintenance personnel

- 43.2.3.1 Perform annual maintenance and inspection of cranes and hoists, as well as ropes, slings and other equipment which is not covered by preventative maintenance.
- 43.2.3.2 Inspect and load test cranes and hoists following modification or extensive repairs (ex. replaced a cable or hook or structural modification). Conduct periodic and special load tests of cranes and hoists.
- 43.2.3.3 Maintain written records of inspections and tests and provide copies of all inspections and test results to the safety director.
- 43.2.3.4 Schedule a non-destructive test and inspection for crane and hoist hooks at the time of the periodic load test and test and inspect before the use of new replacement hooks and other hooks suspected of having been overloaded. Evaluation, inspection and testing may include, but not limited to visual, dye penetrate or magnetic particle techniques referenced in ASME B30.10 (hooks, inspection and testing).
- 43.2.3.5 Maintain all manuals for cranes and hoists in a central file for reference.

43.2.4 Safety director

- 43.2.4.1 Ensure that training is conducted for all crane and hoist operators.



- 43.2.4.2 Assist crane and hoist operators in obtaining licensing.
- 43.2.4.3 Verify monthly test and inspection reports periodically.
- 43.2.4.4 Interpret crane hoist safety rules and standards.

43.3 GENERAL SAFETY RULES

- 43.3.1 Do not engage in any practice that will divert your attention while operating a crane.
- 43.3.2 Respond to signals only from the person who is directing the lift, or any appointed signal person. Obey a stop signal at all times, no matter who gives it.
- 43.3.3 Ensure that the rated capacity of a crane's bridge, individual hoist or sling or fitting is not exceeded. Know the weight of the object being lifted.
- 43.3.4 Do not move a load over people. People will not be placed in jeopardy by being under a suspended load. Also, do not work under a suspended load unless the load is supported by blocks, jacks, or a solid footing that will safely support the entire weight. Have a crane or hoist operator remain at the controls or lock open and tag the main electrical disconnect switch.
- 43.3.5 Check that all controls are in the *OFF* position before closing the main-line disconnect switch.
- 43.3.6 If spring-loaded reels are provided to lift pendants clear off the work area, ease the pendant up into the stop to prevent damaging the wire.
- 43.3.7 Avoid side pulls. These can cause the hoist rope to slip out of the drum groove, damaging the rope or destabilizing the crane or hoist.
- 43.3.8 To prevent shock loading, avoid sudden stops or starts. Shock loading can occur when a suspended load is accelerated or decelerated, and overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.
- 43.3.9 Fire extinguishers will be maintained in cranes in proper operating condition.
- 43.3.10 When a crane or material hoist has been stored and unused for a period of a month or more or has been exposed to weather conditions which reveal visible wear, rust or other damage, the rope will be inspected by a certified third party. This individual will be required to provide to ZARNAS COMPANIES a record of such inspection, including at a minimum:
 - 43.3.10.1 The inspector's name and certification data
 - 43.3.10.2 The date and purpose of the inspection
 - 43.3.10.3 The identifier (ID) of the rope inspected
 - 43.3.10.4 A listing of noted deficiencies and recommendations
 - 43.3.10.5 Signature



43.3.11 This applies to all other ropes in use by ZARNAS COMPANIES including *running ropes* and/or those ropes in frequent use. This record will be maintained by the crane or hoist operator, in the cab compartment.

43.4 OPERATION RULES

43.4.1 Pre-operational test - At the start of each work shift, operators will do the following steps before making lifts with any crane or hoist:

43.4.1.1 Test the upper-limit switch. Slowly raise the unloaded hook block the limit switch trips.

43.4.1.2 Visually inspect the hook, load lines, trolley, and bridge as much as possible from the operator's station; in most instances, this will be the floor of the building.

43.4.1.3 If provided, test the lower-limit switch.

43.4.1.4 Test all direction and speed controls for both bridge and trolley travel.

43.4.1.5 Test all bridge and trolley limit switches, where provided, if operation will bring equipment in close proximity to the limit switches.

43.4.1.6 Test the pendant emergency stop.

43.4.1.7 Test the hoist brake to verify there is no drift without a load.

43.4.1.8 If provided, test the bridge movement alarm.

43.4.1.9 Lock out and tag for repair of any crane or hoist that fails any of above tests.

43.4.1.10 Always watch out for and be aware of the presence of overhead power lines.

43.5 PROCEDURE

43.5.1 Only suitably trained and experienced personnel will work in lifting and rigging operations. They must successfully attend appropriate courses that ensure demonstrated competency in, the safe use and operations of the equipment and techniques required to perform lifting operations in the expected environment

43.5.2 All personnel are required to attend and participate in the safety meetings, carry out pre-use inspections of the lifted object and lifting equipment. All personnel involved in the lifting operation, not limited to the lifting team, have a responsibility to stop any operation if they are concerned about its safety.

43.5.3 Only employees who have attended an approved riggers course will be involved in rigging and slinging activities. Note up to two trainees may work with a management approval and assigned to a qualified person.

43.5.4 All signs, spreader bars, lifting clamps, lifting chains and hooks will be color-coded in accordance with the approved schedule and color.



- 43.5.5 Use only engineered pad eyes for lifting purposes. Flame cut pad eyes are strictly prohibited.
- 43.5.6 Visual inspections of slings, wire ropes, shackles and loose lifting gear, etc. will be done prior to use each by competent personnel.
- 43.5.7 Detailed inspections of slings, wire ropes, shackles and loose lifting gear, etc. will be conducted by a qualified person nominated by the senior superintendent.
- 43.5.8 All slings, wire ropes, etc. will be handled, lubricated and stored in such manner as to prevent kinks, rust, wires damage or other hazardous effects, such as chemical solvents.
- 43.5.9 Use suitable packing to prevent damage to slings, chains, etc. when in contact with sharp edges.
- 43.5.10 The SWL of the rigging equipment being used must be known and this limit will not be exceeded.
- 43.5.11 Approved gloves must be worn when handling wire rope.
- 43.5.12 Defective equipment will be removed from the work area and quarantined, repaired or disposed.
- 43.5.13 Retirement criteria for damaged slings will be defined within the *wire rope program*. Where damage is noted, a qualified wire rope inspector will inspect the sling prior to use.
- 43.5.14 Wire rope, chain and fiber slings are kept away from flame cutting and electric welding operations.
- 43.5.15 Lifting assemblies will be plainly marked with their designed working loads and should only be used for the purpose for which they were designed.
- 43.5.16 The hoist rope will not be wrapped around the load. The load should be attached to the hook by slings or other devices that are adequate for the load being lifted.
- 43.5.17 When using two or more slings on a load, ensure that all slings are made from the same material.
- 43.5.18 A wire rope will not be wrapped completely around a hook. The sharp radius will damage the sling.
- 43.5.19 Bending the eye section of a sling will be avoided.
- 43.5.20 When lifting rigid objects with slings having three or four legs, any two of the slings must be capable of supporting the total weight.
- 43.5.21 When using choker hitches, the eye will not be forced down toward the load while tension is applied, as rope damage may result.

43.6 CRANE AND HOIST SAFETY DESIGN REQUIREMENTS

- 43.6.1 The design of all commercial cranes and hoists will comply ASME/ANSI and Crane Manufacturer's Association of America standards.
- 43.6.2 Hooks will not be painted or re-painted if previous paint applied by the manufacturer is worn off.
- 43.6.3 Crane pendants will have electrical disconnect switch or button to open the main line control circuit.



- 43.6.4 All crane and hoist hooks will have safety latches eliminating the hook throat opening. Hooks on overhaul ball assemblies, lower load blocks. Or other attachment assemblies will be of a type that can be closed and locked, eliminating the hook throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut and retaining pin may be used.
- 43.6.5 Crane bridges and hoist monorails will be labeled on both sides with the maximum capacity.
- 43.6.6 Each hoist-hook block will be labeled with the maximum hook capacity.
- 43.6.7 Directional signals indicating N-S-E-W will be displayed on the bridge underside and a corresponding directional label will be placed on the pendant.
- 43.6.8 All newly installed cranes and hoists or those that have been extensively repaired or rebuilt structurally, will be load tested at 125% capacity prior to being placed into service.
- 43.6.9 Device such as upper limit switch or slip clutch is installed on building cranes and hoists. A lower limit switch may be required when insufficient hoist rope on the drum to reach the lowest point.
- 43.6.10 All cab and remotely operated bridge cranes will have a motion alarm to signal bridge movement.
- 43.6.11 If an overload device is installed, a load test to the adjusted setting is required.
- 43.6.12 Personnel baskets and platforms suspended from any crane will be designed in accordance with the specifications in 29 CFR 1926.550(g).

43.7 CRANE AND HOIST OPERATIONS

- 43.7.1 ZARNAS COMPANIES employees will ensure that all lifting apparatus equipment will be visually inspected for evidence of overloading, excessive wear or damage prior to first use each day. Equipment found to be defective will be removed from service.
- 43.7.2 Equipment involved in hoisting or lifting operations will be proof tested and annually re-certified by testing the capability of lifting specified percentage loads based on manufacturers rated capacity.
- 43.7.3 After re-certification tests have been completed, a tag will be permanently affixed to the tested apparatus. The tag will contain equipment identification and safe working load, date of re-certification and date of next re-certification.
- 43.7.4 The requirement for annual re-certification/proof load tests does not apply to those slings not in use and placed in storage. However, such slings will be subjected to the required inspections and proof load test prior to any future use.
 - 43.7.4.1 Operating hoisting equipment safely.
 - 43.7.4.2 Conducting functional tests prior to using the equipment.
 - 43.7.4.3 Selecting and using rigging equipment appropriately.
 - 43.7.4.4 Having a valid operator's license on their person while operating cranes or hoists.

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43.7.4.5 Participating in the medical certification program, as required.

43.7.5 The chart below shows equipment type, re-certification cycles and proof load amount (Rated Capacity = RC).

<i>EQUIPMENT</i>	<i>RE-CERTIFICATION CYCLE</i>	<i>PROOF LOAD</i>
<i>Slings</i>	Annually 125% RC	200% RC
<i>Chain</i>	Annually 125% RC	200% RC
<i>Wire</i>	Annually 125% RC	200% RC
<i>Metal mesh</i>	Annually 125% RC	150% RC
<i>Fiber/maximum field</i>	Annually 125% RC	100% RC
<i>Hooks</i>	Annually 100% RC or to specifications of attached equipment	125% RC or to specifications of attached equipment
<i>Hoist</i>	Annually 100% RC	125% RC
<i>Chain falls</i>	Annually 100% RC	125% RC
<i>Come-a-longs</i>	Annually 100% RC	125% RC
<i>Winches</i>	Annually 100% RC	125% RC
<i>Hoists and jib crane</i>	Annually 100% RC	125% RC
<i>Shackles, eyebolts and attached equipment</i>	Annually 125% RC	200% RC
<i>Spreader bar and special rigging equipment</i>	Annually 150% RC	150% RC

43.8 WIRE ROPE CABLE

43.8.1 A wire rope consists of a core member, around which a number of multi-wired strands are laid one helically bent. There are two general types of cores or wire rope

43.8.1.1 Fiber cores

43.8.1.1.1 May be made from natural or synthetic fibers

43.8.1.2 Wire cores

43.8.1.2.1 Can be an independent wire rope core, a strand core or a *Tuf-flex* core



- 43.8.2 Purpose of the core is to provide support and maintain position of outer strands during operation.
- 43.8.3 Any number of multi-wired strands may be laid around the core. The most popular arrangements are six strands around the core, as this combination gives the best balance.
- 43.8.4 The number of wires per strand may vary from 3 to 91, with the majority of wire ropes falling into the 7-wire, 19-wire or 37-wire strand categories.

43.9 WIRE ROPE

- 43.9.1 Lay of a wire rope is simply a description of the way wires and strands are placed during component construction. Right lay and left lay refer to the directions of strands. Right lay means that the strands pass from left to right across the rope. Left lay means just the opposite.
- 43.9.2 Regular lay and lang lay describe the way wires are placed within each stand. Regular lay means that wires in the strands are laid opposite in direction to the lay of the strands. Lang lay means that wires are laid in the same direction as the lay of the strands.
- 43.9.3 Most of the wire rope used is right lay, regular lay. This specification has the widest range of applications and meets the requirements of most equipment. Other lay specifications are considered exceptions and must be requested when ordering.
- 43.9.4 Lang lay is recommended for many excavating and construction applications, including draglines, hoist lines, dredge lines and other similar lines. Lang lay ropes are more flexible than regular lay.

43.10 WIRE ROPE FAILURE

- 43.10.1 Some common cause of wire rope failure are as follows:
 - 43.10.1.1 Wire rope allowed dragging over objects or rubbing against objects.
 - 43.10.1.2 Wire rope not properly lubricated.
 - 43.10.1.3 Wire rope over winding or cross winding on drums, side-pulls, the most common of lift cable damage, will cause cross winding or over winding. Side pulls are not permitted.
 - 43.10.1.4 Wire rope operating over defective or out of alignment sheaves and drums.
 - 43.10.1.5 Wire rope jumping sheave flanges.
 - 43.10.1.6 Wire rope subjected to heat, moisture or acid fumes, except stainless steel
 - 43.10.1.7 Rope required where moisture and/or acid alkali fumes prevail.
 - 43.10.1.8 Wire rope permitted to untwist.
 - 43.10.1.9 Wire rope kinked.
 - 43.10.1.10 Wire rope subjected to sever overloads, reverse bends and other excessive stresses.



43.10.1.11 Wire rope life will vary depending upon the equipment it is used on, operating conditions, degree of lubrication and maintenance, type of rope, climate and operator handling traits.

43.10.2 Operating conditions that affect wire rope life:

43.10.2.1 Bending stresses

43.10.2.2 Loading conditions

43.10.2.3 Crushing

43.10.2.4 Rope speeds

43.10.2.5 Abrasion

43.10.2.6 Corrosion

43.10.2.7 Equipment design

43.10.2.8 Portability

43.10.2.9 Materials handled

43.11 MOVING A LOAD

43.11.1 Center the hook over the load to keep the cables from slipping out of the drum grooves and overlapping and to prevent the load from swinging when it is lifted. Inspect the drum to verify that the cable is in the grooves.

43.11.2 Use a tagline, unless their use creates an unsafe condition, when loads must traverse distances or must otherwise be controlled. Manila rope may be used for taglines.

43.11.3 Plan and check the travel path to avoid personnel and obstructions.

43.11.4 Lift the load only high enough to clear the tallest obstruction in the travel path.

43.11.5 Start and stop slowly.

43.11.6 Land the load when the move is finished. Choose a safe landing.

43.11.7 Never leave suspended loads unattended. In an emergency where crane or hoist is inoperative, if a load must be left suspended, barricade and post signs in the surrounding area, under the load and on all four sides. Lock open and tag the crane or hoist's main electrical disconnect switch.

43.12 RIGGING

43.12.1 Rigging equipment for material handling will be inspected prior to use and on each shift and as necessary during its use to ensure that it is safe.

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- 43.12.2 Select only that rigging equipment which is in good condition. Defective equipment is to be removed from service and destroyed to prevent inadvertent reuse. The load capacity limits will be stamped or affixed to all rigging components and rigging equipment will not be loaded beyond its recommended safe working load. Riggers must have completed rigger training or are not allowed to perform rig-ups.
- 43.12.3 Rigging equipment not in use will be removed from the immediate work area as so as not to present a hazard to employees.
- 43.12.4 ZARNAS COMPANIES policy requires a minimum safety factor of 5 to be maintained for wire rope slings. The following types of slings will be rejected or destroyed:
 - 43.12.4.1 Nylon slings with:
 - 43.12.4.1.1 Abnormal wear
 - 43.12.4.1.2 Torn stitching
 - 43.12.4.1.3 Broken or cut fibers
 - 43.12.4.1.4 Discoloration or deterioration
 - 43.12.4.2 Wire-rope slings with:
 - 43.12.4.2.1 Kinking, crushing, bird-caging or other distortions
 - 43.12.4.2.2 Evidence of heat damage
 - 43.12.4.2.3 Cracks, deformation or worn end attachments
 - 43.12.4.2.4 Six randomly broken wires in a single rope lay
 - 43.12.4.2.5 Three broken wires in one strand of rope
 - 43.12.4.2.6 Hooks opened more than 15% at the throat
 - 43.12.4.2.7 Hooks twisted sideways more than 10° from plane of unbent hook
 - 43.12.4.2.8 Cracked, bent or elongated links or components
 - 43.12.4.2.9 Cracked hooks
 - 43.12.4.2.10 Damaged or deformed shackles, eye bolts, turnbuckles or other components

43.13 RIGGING A LOAD

- 43.13.1 Only those employees who have completed rigger training or inspector training may attach and detach loads to cranes.
- 43.13.2 Determine the weight of the load. Do not guess.

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- 43.13.3 Determine the proper size for slings and components.
- 43.13.4 Do not use manila rope for rigging.
- 43.13.5 Make sure that shackle pins and shouldered eye bolts are installed in accordance with the manufacturer's recommendations.
- 43.13.6 Ordinary (shoulderless) eye bolts are threaded in at least 1.5 times the bolt diameter.
- 43.13.7 Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts whenever possible.
- 43.13.8 Pad sharp edges to protect slings. Remember that machinery foundations or angle-iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load. Wood, tire rubber or other pliable materials may be suitable for padding.
- 43.13.9 Do not use slings, eye bolts, shackles or hooks that have been cut, welded or brazed.
- 43.13.10 Install wire rope clips with the base only on the live end and the U-bolt only on the dead end. Follow the manufacturer's recommendations for the spacing for each specific wire size.
- 43.13.11 Initially lift the load only a few inches to test the rigging and balance.

43.14 CRANE OVERLOADING

- 43.14.1 Cranes or hoists will not be loaded beyond their rated capacity for normal operations. Any crane or hoist suspected of having been overloaded will be removed from service by locking open and tagging the main disconnect switch. Additionally, overloaded cranes will be inspected, repaired, load tested and approved for use before being returned to service.

43.15 WORKING AT HEIGHTS ON CRANES OR HOISTS

- 43.15.1 Anyone conducting maintenance or repair on cranes or hoists at heights greater than 6 feet will use fall protection. Fall protection should also be considered for heights less than 6 feet when obstructions are present beneath the individual. Fall protection includes safety harnesses that are fitted with lifeline and securely attached to a structural member of the crane or building or properly secured safety nets.
- 43.15.2 Use of a crane as a work platform should only be considered when conventional methods of reaching an elevated worksite are hazardous or not possible. Workers will not ride a moving bridge crane without approval from safety department, who will specify, as a minimum:
 - 43.15.2.1 Personnel will not board a bridge crane unless main switch is locked and tagged open.
 - 43.15.2.2 Personnel will not use bridge cranes without a permanent platform (catwalk) as work platforms. Bridge catwalks will have a permanent ladder access.
 - 43.15.2.3 Personnel will ride seated on the floor of a permanent platform with approved safety handrails, wear safety harness attached to designated anchors and be in clear view of the crane operator at all times.



- 43.15.2.4 Operators will lock and tag open the main (or power) disconnect switch on the bridge catwalk when the crane is parked.

43.16 SIGNALING

- 43.16.1 A signal person must be provided in each of the following situations:
 - 43.16.1.1 Load travel or the area near or at load placement is not in full view of the operator.
 - 43.16.1.2 When the equipment is traveling, the view in the direction of travel is obstructed.
 - 43.16.1.3 The operator or person handling the load determines a signal person is necessary due to site specific safety concerns.
- 43.16.2 Signals to the operator will be in accordance with standard signals unless voice communications equipment is used. Signals will be discernible or audible at all times.
- 43.16.3 Signals to operators must use the hand, voice, audible method. Means of transmitting the signals (direct line of sight, radio, etc) must be suitable and appropriate for the site conditions. Hand signals must follow 1926.1419(f) in Appendix A of Subpart CC.
- 43.16.4 Some special operations may require addition to or modification of the basic signals. For all such cases, these special signals will be agreed upon and thoroughly understood by both the person giving the signals and the operator and will not be in conflict with the standard signals.
- 43.16.5 Ability to transmit signals between the operator and signal person must be maintained. If the signal is interrupted at any time, the operator must safely stop operations requiring signals until communication is reestablished and a proper signal is given and understood.
- 43.16.6 Each signal person must:
 - 43.16.6.1 Know and understand the type(s) of signals used
 - 43.16.6.2 Be competent in the application of the type of signals used
 - 43.16.6.3 Have basic understanding of equipment operation and limitations, including crane dynamics involved in swinging and stopping and boom deflection from hoisting
 - 43.16.6.4 Demonstrate that he/she meets the qualification requirements through an oral or written test, and through a practical test
- 43.16.7 Only one person will give signals to a crane operator at a time, unless the emergency stop signal is given due to safety issues.
- 43.16.8 The device used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear and reliable.

43.17 INSPECTION AND MAINTENANCE

- 43.17.1 All tests and inspections will be conducted in accordance with the manufacturer recommendations.

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- 43.17.2 All in-service cranes and hoists will be inspected monthly and the results documented on the *Crane Inspection Report*.
- 43.17.3 Defective cranes and hoists will be locked and tagged out of service until all defects are corrected. The inspector will initiate corrective action by notifying the operations manager.
- 43.17.4 The onsite employee will schedule and supervise annual preventative maintenance inspections of all cranes and hoists. The annual PM and inspection will cover:
 - 43.17.4.1 Hoisting and lowering mechanisms
 - 43.17.4.2 Trolley travel or monorail travel
 - 43.17.4.3 Bridge travel
 - 43.17.4.4 Limit switches and locking and safety devices
 - 43.17.4.5 Structural members
 - 43.17.4.6 Bolts or rivets
 - 43.17.4.7 Sheaves and drums
 - 43.17.4.8 Parts such as pins, bearings, shafts, gears, rollers, locking devices and clamping devices
 - 43.17.4.9 Brake system parts, linings, pawls and ratchets
- 43.17.5 Load, wind and other indicators over their full range
 - 43.17.5.1 Gasoline, diesel, electric or other power plants
 - 43.17.5.2 Chain-drive sprockets
 - 43.17.5.3 Crane and hoist hooks
 - 43.17.5.4 Electrical apparatus (ex. controller contractors, limit switches, push button stations)
 - 43.17.5.5 Wire rope
 - 43.17.5.6 Hoist chains
- 43.17.6 Load testing must be performed as follows:
 - 43.17.6.1 Newly installed cranes and hoists will be load tested at 125% of the rated capacity by designated personnel.
 - 43.17.6.2 Slings will have appropriate test data when purchased. It is the responsibility of the purchaser to ensure that the appropriate test data are obtained and maintained.



- 43.17.6.3 Re-rated cranes and hoists will be load tested to 125% of the new capacity if the new rating is greater than the previous rated capacity.
- 43.17.6.4 Fixed cranes and hoists that have had major modifications or repair will be load tested to 125% of the rated capacity.
- 43.17.6.5 Cranes and hoists that have been overloaded are inspected prior to being returned to service.
- 43.17.6.6 Personnel platforms, baskets, and rigging suspended from a crane or hoist hook will be load tested initially, then re-tested annually thereafter or at each new jobsite.
- 43.17.6.7 Mobile hoists are load tested at intervals to be determined by a qualified individual
- 43.17.6.8 All cranes and hoists with a capacity greater than 3 tons should be load tested every four years to 125% of the rated capacity. Cranes and hoists with a lesser capacity should be load tested every eight years to 125% of the rated capacity.

43.18 LOAD BINDING POLICY

- 43.18.1 Failure to use load binders properly may result in serious injury or even death to an employee.
- 43.18.2 Do not operate a load binder while standing on the load.
- 43.18.3 Move the handle with caution.
- 43.18.4 Keep all body parts clear.
- 43.18.5 Keep yourself out of the path of the moving handle and any loose chain lying on the handle.
- 43.18.6 You must be familiar with state and federal regulations regarding size and number of chain systems required for securing loads on trucks.
- 43.18.7 Always consider the safety of nearby workers as well as yourself when using load binders.
- 43.18.8 While under tension, a load binder must not bear against an object, as this will cause side load.
- 43.18.9 Do not use a handle extender (cheater pipe).
- 43.18.10 Do not attempt to close or open the binder with more than one person.
- 43.18.11 When using a lever type load binder:
 - 43.18.11.1 Hook the load binder to the chain to operate it while standing on the ground. Position the load binder so its handle can be pulled downward to tighten the chain. Be aware of ice, snow, rain, oil, etc. that can affect your footing. Make certain footing is secure.
 - 43.18.11.2 Use of a handle extender (cheater pipe) is prohibited. If sufficient leverage cannot be obtained using the lever type load binder by itself, use a ratchet type binder.

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- 43.18.11.3 During and after tightening chain, check the load binder handle position. Be sure it is in the locked position and that it's bottom side touches the chain link.
- 43.18.11.4 Chain tension may decrease due to load shifting during transport. To be sure load binder remains in proper position, secure handle to chain by wrapping loose end of chain around the handle and the tight chain, or tie handle to the chain with soft wire.
- 43.18.11.5 When releasing the load binder, remember there is a great deal of energy in the stretched chain. This will cause the load binder handle to move very quickly with great force when it is unlatched. Move the handle with caution. If you can whip – Keep all body parts clear.
- 43.18.11.6 Never use a cheater pipe or handle extender to release the handle. Use a steel bar and pry under the handle and stay out of the path of handle as it moves upward.
- 43.18.11.7 If you release the handle by hand, use an open hand under the handle and push upward. Do not close your hand around the handle. Always keep yourself out of the path of the moving handle.
- 43.18.12 When using a ratchet load binder:
 - 43.18.12.1 Manually unscrew the end hoods to get enough reach.
 - 43.18.12.2 Position ratchet binder so it can be operated from the ground
 - 43.18.12.2.1 Ideal placement is between waist and chest high
 - 43.18.12.3 Attach one hook close to an anchor point to minimize hood rotation.
 - 43.18.12.4 Keep fingers and hands away from pawl and gear.
 - 43.18.12.5 Take up as much slack as possible and hook chain to opposite end of load binder.
 - 43.18.12.6 Set the pawl and start closing the load binder, use clean gloves.
 - 43.18.12.7 Maintain a buffer zone from the end of the ratchet handle.
 - 43.18.12.8 Secure footing and stroke handle until desired tension is achieved, handle extensions are prohibited.
 - 43.18.12.9 Loads can shift. Check tension of the load binder frequently and retighten as needed. They also have greater wearing surface than regular lay ropes.

43.19 TRAINING

- 43.19.1 Any worker who uses a crane or hoist or who applies rigging, will have authorization from the safety director and current training/certification. This includes hands-on training.
- 43.19.2 To be qualified as a crane and hoist operator, the employee will have received hands-on training from a licensed crane and hoist operator and his supervisor must complete and sign the



Qualification Request Form and *Crane Safety Checklist* and send them to the safety director for review and approval.

- 43.19.3 Training for lifting operations will cover at minimum, regulatory requirements along with:
 - 43.19.3.1 Implication of environmental/weather conditions
 - 43.19.3.2 Use of lifting equipment in restricted areas
 - 43.19.3.3 Lifting SIMOPS or parallel activities
 - 43.19.3.4 Visibility and communication during lifting operations
 - 43.19.3.5 Proximity hazards such as electrical or changing conditions
 - 43.19.3.6 Prevention of load striking any person or object
 - 43.19.3.7 Pre-check of lifting equipment and identification of faults and defects
 - 43.19.3.8 Pre-check of the lifted object for loose items
 - 43.19.3.9 Attaching, securing and detaching loads
 - 43.19.3.10 Tagline operations
 - 43.19.3.11 Overloading and de-rating of lifting equipment
 - 43.19.3.12 Overturning, tilting, slipping and dragging loads
 - 43.19.3.13 Not working under suspended loads
 - 43.19.3.14 Not leaving loads suspended
 - 43.19.3.15 Lifting of people
 - 43.19.3.16 Continuing integrity of lifting equipment and accessories
- 43.19.4 Training will incorporate familiarization with rigging, hardware, slings and safety issues associated with rigging, lifting loads and lift planning. Training will include classroom, hands on training and exams. Hands-on should include proper inspection, use, selection and maintenance of loose gears (lings, shackles, hooks, etc.)

WEBBING SLING LOAD CHART

Single, Double, Three and Four Ply with Soft Eye End

Lifting Modes

100%

200%

140%

80%



Flat Polyester Single Ply

Capacity	Width		Color	Working load limit in Kg different angle usage			
	Inch	mm		100%	200%	140%	80%
0.5T	1	25	VIOLET	500	1000	700	400
1T	2	50	GREEN	1000	2000	1400	800
1.5T	3	75	YELLOW	1500	3000	2100	1200
2T	4	100	GREY	2000	4000	2800	1600
2.5T	5	125	RED	2500	5000	3500	2000
3T	6	150	BROWN	3000	6000	4200	2400
4T	8	200	BLUE	4000	8000	5600	3200
5T	10	250	ORANGE	5000	10000	7000	4000
6T	12	300	ORANGE	6000	12000	8400	4800

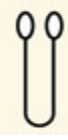
Lifting Modes

100%

200%

140%

80%

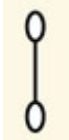


Flat Polyester Double Ply

SWL/WLL	Width		Color	SWL/WLL in Kg different modes			
	Inch	mm		100%	200%	140%	80%
1T	1	25	VIOLET	1000	2000	1400	800
2T	2	50	GREEN	2000	4000	2800	1600
3T	3	75	YELLOW	3000	6000	4200	2400
4T	4	100	GREY	4000	8000	5600	3200
5T	5	125	RED	5000	10000	7000	4000
6T	6	150	BROWN	6000	12000	8400	4800
8T	8	200	BLUE	8000	16000	11200	6400
10T	10	250	ORANGE	10000	20000	14000	8000
12T	12	300	ORANGE	12000	24000	16800	9600

Lifting Modes

100%



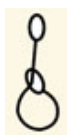
200%



140%



80%



Flat Polyester Three Ply

SWL/WLL	Width		Color	SWL/WLL in Kg different modes			
	Inch	mm		100%	200%	140%	80%
1.5T	1	25	VIOLET	1500	3000	2100	1200
3T	2	50	GREEN	3000	6000	4200	2400
4.5T	3	75	YELLOW	4500	9000	6300	3600
6T	4	100	GREY	6000	12000	8400	4800
7.5T	5	125	RED	7500	15000	10500	6000
9T	6	150	BROWN	9000	18000	12600	7200
12T	8	200	BLUE	12000	24000	16800	9600
15T	10	250	ORANGE	15000	30000	21000	12000
18T	12	300	ORANGE	18000	36000	25200	14400

Lifting Modes

100%



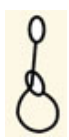
200%



140%



80%



Flat Polyester Four Ply

SWL/WLL	Width		Color	SWL/WLL in Kg different modes			
	Inch	mm		100%	200%	140%	80%
2T	1	25	VIOLET	2000	4000	2800	1600
4T	2	50	GREEN	4000	8000	5600	3200
6T	3	75	YELLOW	6000	12000	8400	4800
10T	4	100	GREY	8000	16000	11200	6400
12T	5	125	RED	10000	20000	14000	8000
16T	6	150	BROWN	12000	24000	16800	9600
20T	8	200	BLUE	16000	32000	22400	12800
20T	10	250	ORANGE	20000	40000	28000	16000
24T	12	300	ORANGE	24000	48000	33600	19200



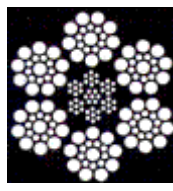
ZARNAS

WIRE ROPE

Failure to read, understand, and follow manufactures instructions may cause death or serious injury.



MacWhyte
7 X 19
Aircraft Cable

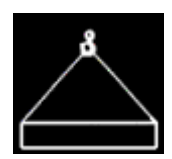
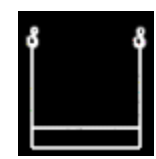


MacWhyte
6 X 19
Aircraft Cable

Size	W.L.L Galvanized	Max load Galvanized	Weight per 100 Ft	Size	W.L.L Galvanized	Max load Galvanized
3/16	840 lbs	4200 lbs	6.5 lbs	3/16		
1/4"	1400 lbs	7000 lbs	11 lbs	1/4"	1060 lbs	5300 lbs
5/16"	1960 lbs	9800 lbs	17.30 lbs	5/16"	1640 lbs	8200 lbs
3/8"	2880 lbs	14400 lbs	24.30 lbs	3/8"	2360 lbs	11800 lbs
1/2"	4560 lbs	22800 lbs	45.80 lbs	1/2"	4120 lbs	20600 lbs
5/8"	7000 lbs	35000 lbs	71.50 lbs	5/8"	6440 lbs	32200 lbs

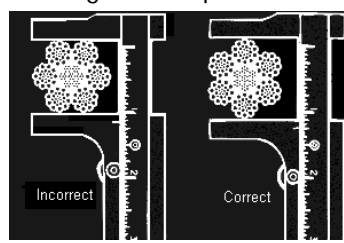
Wire Rope Size

Crosby O & T Carbon Shackle
Minimum shackle size for
D/d > 1 At Load Connection



Wire Rope Size	shackle size	vertical	choker	two leg	60° sling angle	45° sling angle
1/4"	5/16"	1120 lbs	820 lbs	2200 lbs	1940 lbs	1500 lbs
5/16"	3/8"	1740 lbs	1280 lbs	3400 lbs	3000 lbs	2400 lbs
3/8"	7/16"	2400 lbs	1840 lbs	4800 lbs	4200 lbs	3400 lbs
1/2"	5/8"	4400 lbs	3200 lbs	8800 lbs	7600 lbs	6200 lbs
5/8"	3/4"	6800 lbs	5000 lbs	13600 lbs	11800 lbs	9600 lbs

Measuring Wire Rope



There is only one right way to measure rope diameter. Use machinist's calipers and be sure to measure the widest diameter. The drawing on the top compare the correct way with the incorrect way. This method is not only useful for measuring the diameter of the rope, but also for determining the amount of wear and compression that has occurred while the rope has been in use. Accurate recording of this information is essential in helping to decide when to replace the wire rope. Wire rope is normally made slightly larger than its catalog (or nominal) size. The following chart lists the size tolerances of wire rope.

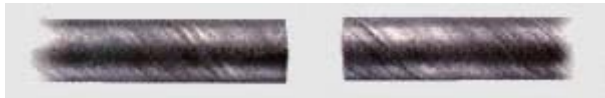
Nominal Rope Diameter	Tolerance Under Over
0 - 1/8"	-0 +8%
Over 1/8" - 3/16"	-0 +7%
Over 3/16" - 5/16"	-0 +6%
Over 5/16"	-0 +5%

WIRE ROPE WEAR AND ABUSE

All wire ropes should be thoroughly inspected at regular intervals. The longer it has been in service or the more severe the service, the more thoroughly and frequently it should be inspected. Be sure to maintain records of each inspection. Inspections should be carried out by a person who has learned through special training or practical experience what to look for and who knows how to judge the importance of any abnormal conditions they may discover. It is the inspector's responsibility to obtain and follow the proper inspection criteria for each application inspected.



Here's what happens when a wire breaks under tensile load exceeding its strength. It's typically recognized by the "cup and cone" appearance at the point of failure. The necking down of the wire at the point of failure to form the cup and cone indicates failure has occurred while the wire retained its ductility.



This is a wire with a distinct fatigue break. It's recognized by the square end perpendicular to the wire. This break was produced by a torsion machine that's used to measure the ductility. This break is similar to wire failures in the field caused by fatigue.



A wire rope that has been subjected to repeated bending over sheaves under normal loads. This results in fatigue breaks in individual wires -- these breaks are square and usually in the crown of the strands.



An example of fatigue failure of a wire rope subjected to heavy loads over small sheaves. The breaks in the valleys of the strands are caused by "strand nicking." There may be crown breaks, too.



Here you see a single strand removed from a wire rope subjected to "strand nicking." This condition is a result of adjacent strands rubbing against one another. While this is normal in a rope's operation, the nicking can be accentuated by high loads, small sheaves or loss of core support. The ultimate result will be individual wire breaks in the valleys of the strands.



A *birdcage* is caused by sudden release of tension and the resulting rebound of rope. These strands and wires will not be returned to their original positions. The rope should be replaced immediately.



A typical failure of a rotary drill line with a poor cutoff practice. These wires have been subjected to continued peening, causing fatigue type failures. A predetermined, regularly scheduled cutoff practice can help eliminate this type of problem.



Localized wear over an equalized sheave. The danger here is that it's invisible during the rope's operation, and that's why you need to inspect this portion of an operating rope regularly. The rope should be pulled off the sheave during inspection and bent to check for broken wires.



Wire rope with a high strand -- a condition in which one or strands are worn before adjoining strands caused by improper socketing or seizing, kinks or dog-legs. At top, you see a close up of the concentration of wear. It recurs every sixth strand in a 6 strand rope.



A kinked wire rope is shown here. It's caused by pulling down a loop in a slack line during handling, installation or operation. Note the distortion of the strands and individual wires. This rope must be replaced.



Here's a wire rope that has jumped a sheave. The rope *curled* as it went over the edge of the sheave. When you study the wires, you'll see two types of breaks here: tensile *cup and cone* breaks and sheave breaks that appear to have been cut on an angle.



Drum crushing is caused by small drums, high loads and multiple winding conditions. In accordance with good rigging and maintenance practices All rigging equipment and hardware should be inspected periodically for wear, abuse and general adequacy.



ZARNAS

CROSBY SCREW PIN SHACKLE DIMENSIONS

NOMINAL SIZE (in.)	WORKING LOAD LIMIT (t)*	STOCK NO.		WEIGHT EACH (lbs)	DIMENSIONS											TOLERANCE +/-	
		G-209	S-209		A	B	C	D	E	F	G	H	L	M	P	C	A
3/16	1/3	1018357		.06	.38	.25	.88	.19	.60	.56	.98	1.47	.16	1.47	.19	.06	.06
1/4	1/2	1018375	1018384	.10	.47	.31	1.13	.25	.78	.61	1.28	1.84	.19	1.38	.25	.06	.06
5/16	3/4	1018393	1018400	.19	.53	.38	1.22	.31	.84	.75	1.47	2.09	.22	1.66	.31	.06	.06
3/8	1	1018419	1018428	.31	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.03	.38	.13	.06
7/16	1-1/2	1018437	1018446	.38	.75	.50	1.69	.44	1.16	1.06	2.03	2.91	.31	2.38	.44	.13	.06
1/2	2	1018455	1018464	.72	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	.38	2.69	.50	.13	.06
5/8	3-1/4	1018473	1018482	1.37	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	.69	.13	.06
3/4	4-3/4	1018491	1018507	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	6-1/2	1018516	1018525	3.62	1.44	1.00	3.31	.88	2.28	2.09	4.03	5.83	.50	4.50	.97	.25	.06
1	8-1/2	1018534	1018543	5.03	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	.56	5.07	1.06	.25	.06
1-1/8	9-1/2	1018552	1018561	7.41	1.81	1.25	4.25	1.16	2.91	2.69	5.16	7.47	.63	5.59	1.25	.25	.06
1-1/4	12	1018570	1018589	9.50	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	.69	6.16	1.38	.25	.06
1-3/8	13-1/2	1018598	1018605	13.53	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	.75	6.84	1.50	.25	.13
1-1/2	17	1018614	1018623	17.20	2.38	1.63	5.75	1.54	3.88	3.63	6.88	10.00	.81	7.35	1.62	.25	.13
1-3/4	25	1018632	1018641	27.78	2.88	2.00	7.00	1.84	5.00	4.19	8.86	12.34	1.00	9.08	2.25	.25	.13
2	35	1018650	1018669	45.00	3.25	2.25	7.75	2.08	5.75	4.81	9.97	13.68	1.22	10.34	2.40	.25	.13
2-1/2	55	1018678	1018687	85.75	4.13	2.75	10.50	2.71	7.25	5.69	12.87	17.84	1.38	13.00	3.13	.25	.25

NOMINAL SIZE (in.)	WORKING LOAD LIMIT (t)*	G-209-A STOCK NO.	WEIGHT EACH (lbs.)	DIMENSIONS											TOLERANCE	
				A	B	C	D	E	F	G	H	L	M	P	C	A
3/8	2	1017450	.31	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.03	.38	.13	.06
7/16	2-2/3	1017472	.38	.75	.50	1.69	.44	1.16	1.06	2.03	2.91	.31	2.38	.44	.13	.06
1/2	3-1/3	1017494	.63	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	.38	2.69	.50	.13	.06
5/8	5	1017516	1.38	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	.69	.13	.06
3/4	7	1017538	2.25	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	9-1/2	1017560	3.61	1.44	1.00	3.31	.88	2.28	2.09	4.03	5.83	.50	4.50	.97	.25	.06
1	12-1/2	1017582	5.32	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	.56	5.07	1.06	.25	.06
1-1/8	15	1017604	7.25	1.81	1.25	4.25	1.16	2.91	2.69	5.16	7.47	.63	5.59	1.25	.25	.06
1-1/4	18	1017626	9.88	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	.69	6.16	1.38	.25	.06
1-3/8	21	1017648	13.25	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	.75	6.84	1.50	.25	.13

SAFE DRIVING PROGRAM

Revision Date: 05/2015



SAFE DRIVING PROGRAM

44.1 PURPOSE

- 44.1.1 The purpose of this policy is to protect the safety of workers operating motor vehicles on company business. Protecting employee drivers, passengers and the public is the highest priority. Clear communication of and strict adherence to, the policy guidelines and procedures are essential.
- 44.1.2 The conditions and requirements of this safe driving policy apply to all vehicles owned, leased, rented or contracted to ZARNAS COMPANIES where any worker is required to operate, service and maintain a vehicle in accordance with the manufacturer's specifications, the Highway Traffic Act and the company's conformance requirements.

44.2 DRIVER SELECTION

- 44.2.1 Only company authorized and assigned employees are allowed to drive company vehicles at any time. Prior to being authorized, the company will check the following items. Drivers must have:
 - 44.2.1.1 Valid unrestricted driver's license.
 - 44.2.1.2 Current MVR driving record with no more than 2 points and no serious or major violations.
- 44.2.2 The company will also check driving records of all employees authorized to drive on company business on an annual basis.
- 44.2.3 Employees that do not meet these requirements are not authorized or allowed to drive company vehicles or drive their own vehicle on company business.
- 44.2.4 All workers with care and custody of a motor vehicle meeting the aforementioned conditions will comply with the following safety requirements.

44.3 SAFE DRIVING REQUIREMENTS

- 44.3.1 Personal and off duty use of a company vehicle is prohibited.
- 44.3.2 Only authorized company employees are permitted to operate company vehicles. No other family members may drive company vehicles.
- 44.3.3 Non-employee passengers are not permitted in company vehicles at any time, unless they are business related.
- 44.3.4 Operate vehicle in a manner that reflects credit upon you and the company.
- 44.3.5 A pre-trip inspection is required for all vehicles and mobile equipment prior to operation. Walk around the vehicle to check for any defects to the vehicle and to ensure there are no barriers blocking the path. Company owned vehicles and private vehicles used for company business will have a maintenance program in place meeting the minimum manufacturer's recommendation.

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- 44.3.6 Have a valid driver's license for the class of vehicle being driven. The driver's license is to be carried by the driver when operating or driving a vehicle.
- 44.3.7 Seat belts will be worn when vehicle is in motion or when mobile equipment is in operation. Ensure all occupants are seated and have seat belts properly fastened before moving the vehicle.
- 44.3.8 Do not drive if weather or road conditions indicate that the trip should not be attempted.
- 44.3.9 Drivers of company vehicles will not pick up hitchhikers except in emergency situations.
- 44.3.10 Drive in accordance with posted speed limits unless road, traffic or weather conditions demand driving at slower speeds.
- 44.3.11 Drive *defensively* at all times.
- 44.3.12 Become familiar and comply with the traffic laws, rules of the road and ordinances of the city or town in which the vehicle is being operated on company business.
- 44.3.13 All drivers must also be prepared to provide a driver's abstract (A driver abstract contains information on the operator's license, conviction information, demerit points and suspensions) if they are either drivers of company owned vehicles or if they drive their personal vehicles on company business (not including commuting).
- 44.3.14 Drivers may be asked to take a defensive driving course or undergo a driver evaluation.
- 44.3.15 Ensure all company conformance requirements are complied with (ex. no smoking policy, substance abuse policy).
- 44.3.16 The vehicle will only be used for its intended purpose.
- 44.3.17 Authorized drivers will follow safe driving practices.
- 44.3.18 Do not leave a vehicle motor running while refueling, installing tire chains, changing tires or where it may create a hazardous condition for work related activities (ex. flaring a well).
- 44.3.19 When parked on an incline, turn the engine off, leave the vehicle in gear (*PARK* for automatics) and set the emergency brake so that the vehicle does not move while unattended. Always make sure to turn the wheels into the curb (if available) when parking downhill and turn the wheels away from the curb when parking uphill.
- 44.3.20 Ensure that the intended path of travel is clear before moving the vehicle.
- 44.3.21 Ensure that all items stored in the cab or utility compartment are suitably stored and secured in order to prevent any unintentional movement of the items which could cause spillage, damage to the vehicle or injury to the occupants.
- 44.3.22 Cell phone use is prohibited while driving on client property.

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- 44.3.23 Turn mobile radios and/or cellular telephones off when vehicles are being used near perforating or blasting operations. The same initiative must be considered when refueling vehicles or stopping in a potentially explosive or hazardous atmosphere.
- 44.3.24 Operate vehicles equipped with catalytic converters with caution in areas where hydrocarbon vapors may be present and/or in dry, grassy areas where the heat from the converter could be a source of ignition. Park your vehicle at least 25 feet away from any potential hydrocarbon source.
- 44.3.25 Loads must be secure and not exceed the specifications and legal limits for the vehicle.
 - 44.3.25.1 In the event of a cargo accident, it is considered preventable if investigation shows a mechanical defect of which driver was aware, a defect driver should have found in pre-op inspection or driver caused accident by rough and abusive handling. It is driver's responsibility to secure cargo properly to prevent shifting, loss or damage. Cargo should be safely stowed to prevent flying objects that can strike or distract the driver.
- 44.3.26 Do not allow anyone to stand between the end of the bed and any platform or object being loaded.
- 44.3.27 Where a driver cannot see directly behind the vehicle, the vehicle must be equipped with an automatic audible warning device.
- 44.3.28 Employees driving company vehicles and personal vehicles on company business will be given a copy of the *Company Vehicle Use Policy* and required to read and sign for them.

44.4 IMPAIRED DRIVING

- 44.4.1 Employees are strictly prohibited from operating a motor vehicle while under the influence of drugs or alcohol. This includes blood alcohol level at or above the local legal limit, illegal drugs and prescription medications that cause drowsiness or other conditions that may cause impairment.
- 44.4.2 Do not drive if you believe your physical or mental condition is adversely impacted.
- 44.4.3 Workers who drive motor vehicles for extended hours must be aware of fatigue management. A worker may experience the effects of fatigue while awake. Effects of fatigue begin to take hold long before actually nodding off at the wheel of a vehicle or operating a piece of equipment while awake.
- 44.4.4 ZARNAS COMPANIES will give their workers at least eight hours of rest. Travelling to and from jobsites are not to be included in the eight hours of rest.
- 44.4.5 If a worker experiences any of these symptoms while driving, the worker should take them as a warning that he or she could fall asleep unintentionally:
 - 44.4.5.1 Eyes closing or going out of focus by themselves
 - 44.4.5.2 Difficulty keeping one's head up
 - 44.4.5.3 Non-stop yawning
 - 44.4.5.4 Wandering, disconnected thoughts

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- 44.4.5.5 Cannot remember driving the last few miles
- 44.4.5.6 Drifting between lanes, tailgating or missing traffic signs
- 44.4.5.7 Jerking the car back into the lane
- 44.4.5.8 Drifting off the road and narrowly missing crashing
- 44.4.6 Fatigue can be managed while driving with some of the following strategies:
 - 44.4.6.1 Provide training and information of shift work risks and managing fatigue.
 - 44.4.6.2 Schedule tedious and boring tasks for times when alertness is high and leave the stimulating and motivating tasks for times of day when alertness is lower.
 - 44.4.6.3 Drink caffeinated drinks strategically, avoid them at times when you are alert and use them as a countermeasure when alertness is low.
 - 44.4.6.4 Let your supervisor know if you have had insufficient sleep, feel tired or are exhibiting any of the signs and symptoms of fatigue outlined above.
 - 44.4.6.5 Exercise, walk around or do some physical activity during breaks.
 - 44.4.6.6 For many workers, a high risk task they perform is driving home in the early morning or at the end of a shift. If possible, avoid driving home by using an alternate form of transport, arranging a ride or driving a different route, if that helps to stimulate you. Ensure that you are properly rested before setting off.

44.5 VEHICLE INSPECTION AND PREVENTITIVE MAINTENANCE

- 44.5.1 Company vehicles must be inspected by driver prior to use. Mechanical defects are repaired immediately. The safety director periodically spot checks vehicles to determine their condition.
- 44.5.2 Maintain vehicles in good mechanical repair and ensure that they are properly equipped for expected road, weather and work conditions.
- 44.5.3 Maintain windshields, door glass, rear windows and rear view mirrors properly at all times. Keep glasses clean and free of stickers and other covering materials unless required by law. Windshields that have cracks or shattered spots which can obscure the driver's vision must be replaced.
- 44.5.4 Vehicle inspections will include lights, turn signals, emergency flashers, tires, horn, brakes, fluids, windshield condition and wiper condition and mirrors.
- 44.5.5 All vehicles will also be maintained in accordance with the manufacturers' recommendations. It is the responsibility of the employee assigned the vehicle to ensure proper maintenance and repairs are performed. If the vehicle is not safe, do not drive.

44.6 MOTOR VEHICLE INCIDENT

- 44.6.1 All motor vehicle incidents will be investigated by the supervisor.

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- 44.6.2 Any collision, traffic violation or motor vehicle incident occurring while on company business or involving a company owned vehicle, must be reported immediately to supervisor or safety director.
- 44.6.3 An incident report will be completed by the end of the driver's work day or shift. Any and all provincial police reporting requirements must also be met. Things to remember in the event that you are involved in a motor vehicle incident:
 - 44.6.3.1 Secure the scene
 - 44.6.3.2 Attend to any injured parties
 - 44.6.3.3 Notify local law enforcement and, if required, request medical assistance
 - 44.6.3.4 Do not accept responsibility or otherwise admit to liability
 - 44.6.3.5 Exchange applicable information with all involved parties
 - 44.6.3.6 Determine extent of damage to each vehicle
 - 44.6.3.7 Do not move vehicle(s) until advised by the attending police officer
 - 44.6.3.8 If a camera is available, take pictures of incident location, damage to vehicles or third party property, skid marks, etc.
 - 44.6.3.9 If possible, obtain witness information
 - 44.6.3.10 Submit a report to the company of any incident involving a company or third party vehicle. Any motor vehicle incident must be reported to your supervisor immediately.
- 44.6.4 Employees with two or more preventable accidents in three year period or obtain three points on driving record will be subject to lose driving privileges or have driving privileges restricted.

44.7 TRAINING

- 44.7.1 Safe driving will be periodically covered at ZARNAS COMPANIES safety meetings.
- 44.7.2 In addition to the training and certification requirements imposed by the Highway Traffic Act and the competency requirements for driving a company vehicle, the following will be adhered to:
 - 44.7.2.1 Operates a vehicle with a gross vehicle weight (GVW) rating greater than 5,500 kg (12,000 lb.) will be certified in the General Oilfield Driver Improvement (GODI) course or other appropriate provincial training.
 - 44.7.2.2 Operates a vehicle with a GVW rating greater than 15,000 kg (33,000 lb) will be certified in the Heavy Hauler course or other appropriate provincial training.
 - 44.7.2.3 Transports products designated under Transportation of Dangerous Goods Act and regulations will be trained accordingly.
- 44.7.3 Operates an ATV (including a snowmobile) will undergo training.



SCAFFOLD SAFETY

45.1 PURPOSE

45.1.1 The purpose of this policy is to establish the procedures when working on scaffolds. This program will clarify the hazards of working on scaffolds.

45.2 SCAFFOLD OPERATIONS

45.2.1 Prefabricated scaffolding and any associated components will be constructed and utilized in strict accordance with the manufacturer's instructions. Scaffolds will be constructed and dismantled under qualified supervision.

45.2.2 Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) will be restrained from tipping by guying, tying, bracing or equivalent means.

45.2.3 Supported scaffold poles, legs, posts, frames and uprights will bear on base plates and mud sills or other adequate firm foundation. Footings will be level, sound, rigid and capable of supporting the loaded scaffold without settling/displacement. Unstable objects will not be used to support scaffold units.

45.2.4 The footing or anchorage for scaffolds will be level, rigid, and capable of carrying the maximum intended load without settling or displacement, includes base plates, supports, etc. Unstable objects such as boxes will not be used. Barrels, boxes, loose bricks or concrete blocks will not be used as platforms or to support scaffolds and/or planks.

45.2.5 Any scaffold, including accessories such as braces, brackets, trusses, screw legs, ladders, etc. that is damaged or weakened will be immediately replaced.

45.2.6 Each platform on all working levels of scaffolds will be fully planked or decked between the front uprights and guardrail supports. Scaffold planks will be free of cracks, splits, excessive knots or notable damage. Damage of planking will be shortened to an alternative length where possible or disposed of entirely.

45.2.7 Personnel not associated with scaffold erection or dismantling operations will not enter the immediate area during such activities or when large materials are being installed directly overhead from scaffolds.

45.2.8 When scaffold platforms are more than two feet above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access or direct access from another scaffold, structure, personnel hoist or similar surface will be used. Cross braces will not be used as a means of access. Ladder access will be provided to and made secure at every working platform level.

45.2.8.1 Ladders will be secured.

45.2.8.2 Every ladder will project at least 3 feet above a work platform level or any place used as a landing.

45.2.8.3 All access ways and areas to scaffold will be kept free of all debris and construction materials in order to provide safe ingress and egress.

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- 45.2.8.4 Materials, tools, equipment, etc. will not be thrown up to a higher level, nor down to a lower level and will not be carried by a person if it affects the safety of their own movement to a higher or lower level.
- 45.2.8.5 Scaffold tube or fittings will not be welded or used for gigning purposes or for any other purpose other than scaffolding.
- 45.2.9 Workers on a scaffold more than 10 feet above a lower level will be protected from falling to that lower level. Each employee will be protected by the use of personal fall arrest systems or guardrail systems.
 - 45.2.9.1 Guardrail systems will be installed along all open sides and ends of platforms. Guardrail systems will be installed before the scaffold is released for use by employees other than erection/dismantling crews.
- 45.2.10 When designing a scaffold to be erected, consideration must be made for safe access during dismantling. Before dismantling any scaffold, access must be planned for safety. This may require the use of a workbasket on a crane or the temporary erection of a platform.
- 45.2.11 Before dismantling, check the condition of the scaffold components and their installation method.
- 45.2.12 In addition to wearing hardhats, each employee on a scaffold will be provided with additional protection from falling hand tools, debris and other small objects through the installation of toeboards, screens or guardrail systems or through the use of debris nets, catch platforms or canopy structures that contain or deflect the falling objects.
- 45.2.13 Never secure your lanyard to the same scaffold component that you are dismantling or loosening.
- 45.2.14 Scaffolds will not be erected, used, dismantled, altered or moved such that they or any conductive material handled on them within 10 feet of exposed and energized powerlines less than 50 kv.
- 45.2.15 Scaffolds and scaffold components will not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. Each scaffold and scaffold component will be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.
- 45.2.16 Employees will be prohibited from working on scaffolds covered with snow, ice or other slippery material except as necessary for removal of such materials. Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for workers to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens.

45.3 INSPECTION

- 45.3.1 Scaffolding must be inspected and approved daily. Scaffolds and scaffold components will be inspected for visible defects by a competent person before each work shift and after any occurrence which could affect a scaffold's structural integrity. Any modification to scaffolding requires re-inspection and approval. A competent person will inspect the scaffolds and ensure that it is safe to use. This inspection will be prior to use and during the use of the scaffolds.
- 45.3.2 Drawings and specification for all frame scaffolds over 125 feet in height above the base plates will be designed by a registered professional engineer and copies made available to the employer for inspection purposes.



45.4 TAGS

- 45.4.1 Green tag - Scaffold fully released for access tag will be installed on the entry side of the scaffold when the competent person has completed the checklist and all items meet the requirements. The tag will have the name of the person who inspected and approved the scaffold and date and time.
- 45.4.2 Yellow tag - Caution - Scaffold can be used if hazard(s) are compensated for tag indicates that there are some problems, but if you develop a procedure to be used that will control the hazard, you can use the scaffold.
- 45.4.3 Red tag - Stop - Scaffold not ready for access tag will be installed on the entry side, and the scaffold will be barricaded until the unsafe equipment or condition no longer exists. A competent person will sign the tag.
- 45.4.4 Stop tag - The competent person will inspect the scaffold per the *Scaffold Approval Inspection Checklist* and items that do not meet the requirement must be corrected prior to use, if the equipment or condition cannot be corrected and then a stop tag will be installed.
 - 45.4.4.1 The following conditions require a stop tag: high winds or storm, snow or ice on platform, the scaffold is no longer plumb or any hazardous atmosphere.
- 45.4.5 Prior to any work on a scaffold, a *Scaffold Fully Released for Access* tag must be in place and signed by a competent person. Any employee who violates the stop tag or does not correct hazards will be subject to disciplinary action.

45.5 BARRIERS AND SIGNS

- 45.5.1 Any scaffolding erection process that may potentially cause injury to persons below from accidentally dropped material will be barricaded at a distance of no less than 10 feet from the scaffold boundaries.
- 45.5.2 Only authorized scaffold builders assigned to work on the respective scaffold will be permitted inside the barriers.
- 45.5.3 The barricaded area will have a sign which reads, *DANGER - KEEP OUT SCAFFOLD WORK IN PROGRESS - SCAFFOLDERS ONLY*.
- 45.5.4 When scaffolding is being erected, dismantled, altered or when found to be defective or damaged. A scaffold tag sign will be displayed as close to the access locations as possible that reads, *DANGER - DO NOT USE SCAFFOLD*.
- 45.5.5 Each complete general purpose scaffold will be inspected and approved for use by a certified competent scaffold builder.

45.6 MODIFICATIONS

- 45.6.1 Only a qualified and competent person may make a change to modify scaffolding. These modifications must meet all standards. If a non-qualified person makes changes to the scaffolding, then the scaffold could be unsafe to use as a result of an error in calculations. Employees not qualified to make modification on scaffolding cannot make changes and if they do they are subject to disciplinary action.



45.7 TRAINING

- 45.7.1 ZARNAS COMPANIES will train employees who perform work while on a scaffold to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards.
- 45.7.2 Training when employee is involved in erecting, use of dismantling of scaffolds. Employees who are involved in erecting, disassembling, moving, operating, repairing, maintaining or inspecting a scaffold must be trained by a competent person. The training will include the following:
 - 45.7.2.1 Nature of scaffold hazards, electrical hazards, fall hazards and falling object hazards in the work area.
 - 45.7.2.2 Correct procedures for dealing with electrical hazards and for erecting, maintaining and disassembling fall protection systems and the falling object protection systems being used.
 - 45.7.2.3 Proper use of a scaffold and the proper handling of materials on the scaffold.
 - 45.7.2.4 Correct procedure for erecting, disassembling, moving, operating, repairing, inspecting and maintenance of the type of scaffold used.
 - 45.7.2.5 Design criteria, maximum intended load capacity and intended use of the scaffold.
- 45.7.3 Retraining will be given if there is reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds; when changes in the types of scaffolds, fall protection, falling objects protection or other equipment presents a hazard and the employee has not been previously trained; or when inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.
- 45.7.4 All scaffolds will be constructed by competent person who is trained and authorized. This training will be conducted by qualified trainers. The trained personnel will be required to attend refresher courses on a yearly basis. Training will also be conducted when conditions change. At a minimum, training will cover hazard awareness, updates on fall protection and load capacities.

SHORT SERVICE EMPLOYEE

Revision Date: 05/2015



SHORT SERVICE EMPLOYEE

46.1 PURPOSE

46.1.1 The purpose of this policy is to notify all ZARNAS COMPANIES employees of the short service employee requirements. It establishes certain guidelines regarding the use and training of employees with less than six months of service.

46.2 IDENTIFICATION

46.2.1 Employees with less than six months of company experience will be considered short service employees (SSE).

46.2.2 All SSEs will be required to wear a company issued SSE hard hat.

46.2.3 Supervisory and management positions are excluded from the SSE hard hat requirements.

46.2.4 Personnel who leave and return to ZARNAS COMPANIES and the same job type within one year are exempt from this policy.

46.3 RESPONSIBILITIES

46.3.1 Supervisor

46.3.1.1 Identification of SSEs and assignment of a mentor before work begins.

46.3.1.2 Notifies project manager and safety director regarding which mentor has been assigned to the SSE.

46.3.1.3 Upon completion of the SSEs assignment, the supervisor will complete ZARNAS COMPANIES SSE evaluation process.

46.3.1.4 Discusses the evaluation with the project manager and the SSE to outline any strengths/weaknesses noted during the evaluation period.

46.3.2 Mentor

46.3.2.1 The duty of a mentor is generally assigned to the direct supervisor of the worker but can be assigned to another worker if circumstances allow.

46.3.2.2 Be familiar with the site policies, procedures and any specialized actions required in the work to be performed.

46.3.2.3 Be familiar with the SSEs job, the oversight responsibilities required and the hazards associated with that job.

46.3.2.4 Assumes full safety and job training responsibilities.

46.3.2.5 Have the current orientation training.

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- 46.3.2.6 Be an active participant in the behavior based safety process.
- 46.3.2.7 Exhibit the ability to recognize hazards and unsafe acts. Mentors must remain in compliance at all times with site procedures, policies or requirements and enforce the stop work authority.

46.3.3 Short Service Employee (SSE)

- 46.3.3.1 Inexperienced new hires (with no prior experience in the industry) must wear an SSE hard hat before being evaluated for an upgrade.
 - 46.3.3.1.1 An employee who does not fulfill the requirements outlined on the SSE form (including the basic skills check list) must continue to wear the SSE hard hat until they fulfill the requirements.
- 46.3.3.2 Employees with experience in the industry but less than six months experience with ZARNAS COMPANIES must wear an SSE hard hat until they have six months experience with the company or are promoted to a new position.
- 46.3.3.3 Each employee is responsible for working towards the conditions outlined on the SSE form for their advancement out of the program.

46.3.4 Project manager

- 46.3.4.1 Determine an SSEs status by means of the evaluation process. New hard hats will not be issued without a completed SSE evaluation.
- 46.3.4.2 Participates in SSE evaluation with the supervisor, mentor and SSE at the completion of the six month period or sooner if the SSE fulfills evaluation requirements.
- 46.3.4.3 Forwards the SSE evaluation form to the safety director who will then forward to HR department for recordkeeping.

46.3.5 Safety director

- 46.3.5.1 Review SSE evaluation forms submitted by mentors.
- 46.3.5.2 Issue SSE hard hats.
- 46.3.5.3 Evaluate performance assessment to uncover any training or orientation needs.
- 46.3.5.4 Provides necessary training.
- 46.3.5.5 Revises or develops program(s) to meet employee needs.

46.4 PROCEDURE

- 46.4.1 ZARNAS COMPANIES will provide SSE hard hats for all employees with less than six months of experience in the industry.

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- 46.4.2 ZARNAS COMPANIES will provide a different hard hat for all new employees that have had prior experience but less than six months of service with the company.
- 46.4.3 Employees with experience who have less than six months with the company can be evaluated by the supervisor and/or project manager. Upon completion of SSE requirements, the SSE can be upgraded any time during the six month period.
- 46.4.4 The SSE form must be completed whenever any of the following occur:
 - 46.4.4.1 Ready to move from wearing an SSE hard hat.
 - 46.4.4.2 Has been wearing an SSE hard hat for six months and is not progressing to upgrading.
 - 46.4.4.3 Employee with prior experience begins working for ZARNAS COMPANIES
- 46.4.5 Prior to starting work, the contractor will notify the owner client (project coordinator, contractor contact, and/or onsite supervisor) if an SSE is present on work crews. The method used to identify an SSE needs to be communicated to the owner client.
- 46.4.6 Each SSEs work will be closely monitored for a six month period. During that period, the SSE must demonstrate a good working knowledge, as well as awareness and adherence to ZARNAS COMPANIES policies.
- 46.4.7 SSEs will be monitored for compliance on HSE policies and procedures. The supervisor or project manager will discuss the SSEs progress with the employee at the time the SSE form is completed.
 - 46.4.7.1 If the SSE is not ready to upgrade, the supervisor or project manager will advise the SSE on what requirements must be met for advancement.
- 46.4.8 For purposes of this policy, a crew is defined as those employees working at a single location and who are employed by the ZARNAS COMPANIES
- 46.4.9 ZARNAS COMPANIES SSE crew makeup requirements:
 - 46.4.9.1 Single person crew cannot be an SSE.
 - 46.4.9.2 2-4 person crews must be accompanied by at least one mentor.
 - 46.4.9.3 5 or more person crews will not exceed 20% SSEs.
- 46.4.10 All SSEs must be assigned an experienced mentor to assist the SSE during their SSE period.
- 46.4.11 Subcontractors must manage SSEs in accordance with the requirements of the ZARNAS COMPANIES SSE program.

46.5 MENTORING

- 46.5.1 All SSEs will be assigned to work with an experienced member of the crew.

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46.5.2 The SSE will remain assigned to the mentor until the completion of the SSE evaluation process or if the SSE is reassigned or transferred to a different project.

46.5.2.1 Should the SSE be reassigned to another project, the SSE will be assigned a new mentor upon arrival.

46.5.2.2 Should the mentor be reassigned to another project, a new mentor on the current project will be assigned to the SSE.

46.5.3 Work as a team with the SSE.

46.5.4 At no time will an SSE work alone and unsupervised by the mentor.

46.5.5 Monitors SSE activities taking corrective action(s), if necessary. Supervise the assigned SSE and prevent him/her from performing tasks for which they are not properly trained.

46.5.5.1 It will be the responsibility of all longer service employees to assist any SSE as required.

46.5.6 The mentor will assist the SSE to understand the corporate culture and the safe work practices and policies of ZARNAS COMPANIES

46.5.7 Upon completion of SSEs assignment to project, the mentor will assist with evaluation of the SSE.

46.6 SSE STATUS RELEASE

46.6.1 If there is evidence that the SSE has demonstrated adherence to ZARNAS COMPANIES policies, the mentor can then recommend for the SSE be released from an SSE status.

46.6.2 The mentor can contact the ZARNAS COMPANIES supervisor or project manager and ask that the employee replace the identifying SSE hard hat with a new hard hat that identifies the individual as part of the experienced crew.

46.6.3 The supervisor or project manager, based upon knowledge of the SSE, can recommend the release of an SSE prior to completion of the six month period, however, this decision must be based on individual achievement and prior industry experience.

46.6.4 Upon recommendation for review of the SSE status, ZARNAS COMPANIES project manager and supervisor along with input from the recommending mentor and safety director will review and make a determination whether the SSE will be released from SSE status.

46.7 EVALUATION FORM

46.7.1 Forms can be obtained by the safety director

46.7.2 Will be completed on all SSEs by the supervisor

46.7.3 Must be filled out in its entirety

46.7.4 Will be discussed with the SSE, supervisor and project manager

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46.8 TRAINING

- 46.8.1 Each SSE will be properly trained in hazards present at the work place, procedures, processes and personal protective equipment to prevent hazards from causing injuries, environmental incidents or property damage.
- 46.8.2 Each SSE will be trained on the skills necessary to conduct their assigned job safely and efficiently while providing product quality and economy.
- 46.8.3 Each SSE will be trained on the following:
 - 46.8.3.1 Basic safety orientation
 - 46.8.3.2 Hazard communications with GHS update
 - 46.8.3.3 Hazard identification/Job Safety Analysis
 - 46.8.3.4 Operator specific orientation training
- 46.8.4 ZARNAS COMPANIES will ensure that the SSE is properly trained as per federal, state and industry requirements before starting work when:
 - 46.8.4.1 The employee is first hired
 - 46.8.4.2 The employee is appointed a new job assignment
- 46.8.5 The employee is exposed to new substances, processes, procedures, equipment, etc. that represent a new hazard to the employee.



ZARNAS

**COMPANY SHORT SERVICE EMPLOYEE
NOTIFICATION FORM**

Short Service Employee Information (completed by HR Specialist)

Employee Name (Print)	
Employee Hire Date	Change Date:
Current Job Title	
Time in Present Position	
Years of Oilfield Experience	
Types of Oilfield Experience	

SSE Mentor Information (completed by Supervisor)

Employee Name (Print)	
Employee Hire Date	
Current Job Title	
Time in Present Position	
Years of Oilfield Experience	
Types of Oilfield Experience	

Supervisor Sign-Off (Send to Project Manager)

Print Name:	Print Job Title:	Signature:

Send to Safety and HR Directors and retain in employee's files.

Employee has received the required Safety Orientation	Yes		No	
Employee has received all required Safety Training *	Yes		No	
Employee has received the required safety training except (Attach list of any exceptions)	Yes		No	

*** Safety training shall be determined and conducted by individual company policies and procedures, in compliance with all regulatory requirements.**



SHORT SERVICE EMPLOYEE CHECK LIST

Mentor's Initials as Completed	SSE Initials as Completed	Short Service Employee sets clear expectations and consequences for safe behaviors.
		Does not take unnecessary risks.
		Asks for help when needed.
		Does not try to lift or handle too heavy of a load. Gets mechanical help when needed.
		Raises awareness of possible hazards.
		Intervenes with unsafe behaviors.
		Understands his/her "stop work" authority and responsibility
		Short Service Employee demonstrates ability to do job required:
		Works in a craftsman-like manner.
		Has clear understanding of job to be done.
		The new employee can use tools safely by:
		Communicating
		Demonstrating
		Observing
		New Employee is able to identify the following at the work site:
		Struck by hazards
		Crushed by hazards
		Burns and scalds
		Sharp objects and precautions
		Trip hazards and precautions
		Electrical hazards and precautions
		Fall hazards and precautions
		Hot and / or cold surfaces, piping and equipment
		Chemical hazards and precautions
		Emergency procedures
		Emergency communications
		Respiratory hazards and precautions
		Toxic substance hazards and precautions (ex. Bromide)
		Any additional hazards specific to the job site
		Short Service Employee exhibits compliance to:
		General safety rules and policies
		Safety rules and policies specific to the job being performed
		Housekeeping policies
		PPE requirements
		Short Service Employee shows competency on following equipment:
		a. Equipment Name:
		b. Equipment Name:
		c. Equipment Name:
		Other:

Mentor	New Employee
Today's Date	New Hire Date

Review Dates: 30 day review _____ 60 day review _____ 90 day review _____
 120 day review _____ 150 day review _____ 180 day review _____

DIST: Site Supervision - original Project File – copy Safety Dept. - copy



Job Orientation Guide

Company: _____ Employee: _____
 Trainer: _____ Hire Date: _____
 Date: _____ Position: _____

This checklist is a guideline for conducting employee safety orientations for employees new to (Customize by adding the name of your company). Once completed and signed by the supervisor and employee, it serves as documentation that orientation has taken place.

	Date	Initials
1. Explain the company safety program, including:		
Orientation	_____	_____
On-the-job training	_____	_____
Safety meetings	_____	_____
Accident investigation	_____	_____
Disciplinary action	_____	_____
2. Use and care of personal protective equipment, (e.g., hard hat, fall protection, eye protection, foot protection, FRC, etc.)	_____	_____
3. Line of communication and responsibility for immediately reporting accidents.		
A. When to report an injury	_____	_____
B. How to report an injury	_____	_____
C. Who to report an injury to	_____	_____
D. Filling out accident report forms	_____	_____
4. General overview of operation, procedures, methods and hazards as they relate to the specific job	_____	_____
5. Pertinent safety rules of the company	_____	_____
6. "Stop Work" Authority and responsibility is understood	_____	_____
7. First aid supplies, equipment and training		
A. Obtaining treatment	_____	_____
B. Location of Facilities	_____	_____
C. Location and names of First-aid trained personnel	_____	_____
8. Emergency plan		
A. Exit location and evacuation routes	_____	_____
B. Use of fire fighting equipment (extinguishers, hose)	_____	_____
C. Specific procedures (medical, chemical, etc.)	_____	_____
9. Vehicle safety	_____	_____
10. Personal work habits		
A. Serious consequences of horseplay	_____	_____
B. Fighting	_____	_____
C. Inattention	_____	_____
D. Smoking policy	_____	_____
E. Good housekeeping practices	_____	_____
F. Proper lifting techniques	_____	_____

NOTE TO EMPLOYEES: Do not sign unless ALL items are covered and ALL questions are satisfactorily answered.

The signatures below document that the appropriate elements have been discussed to the satisfaction of both parties, and that the supervisor and the employee accept responsibility for maintaining a safe and healthful work environment.

Date: _____ Supervisor's Signature: _____

Date: _____ Employee's Signature: _____



SILICA AWARENESS

47.1 PURPOSE

47.1.1 The purpose of this policy is to reduce worker exposure to airborne crystalline silica below the PEL by means of substitution, engineering controls, work methods and administrative controls. For purposes of this policy, ZARNAS COMPANIES refers to crystalline silica in a respirable form.

47.2 RESPONSIBILITIES

47.2.1 ZARNAS COMPANIES

47.2.1.1 Determine if silica is present on a project and if so, inform potential contractors

47.2.1.2 Take all reasonable precautions to protect the health and safety of workers

47.2.1.3 Ensure that equipment, materials and PPE are maintained in good condition

47.2.1.4 Provide information, instruction and supervision to protect worker health and safety

47.2.1.5 Acquaint a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent

47.2.2 Employees

47.2.2.1 Know the hazards of silica dust exposure

47.2.2.2 Use the assigned protective equipment in an effective and safe manner

47.2.2.3 Work in accordance with the project specific procedures

47.2.2.4 Report any hazards to their supervisor immediately,

47.3 HEALTH EFFECTS

47.3.1 The prolonged inhalation of respirable dust containing crystalline silica may result in silicosis, a disease characterized by progressive fibrosis of the lungs. A pneumoconiosis (lung disease caused by the inhalation of dust), silicosis is marked by shortness of breath and impaired lung function which may give rise to complications that can result in death. The development and the severity of silicosis depends on the airborne concentration of silica dust to which a worker is exposed and the duration of exposure.

47.3.2 Crystalline silica may be harmful following high exposure levels received over a period, ranging from a few weeks to years or after long-term exposures to lower levels. There are three major types of silicosis: chronic, accelerated and acute.

47.3.3 Chronic silicosis symptoms may not appear for a long time, usually more than 10 years and may progress and worsen over a period of many years.



- 47.3.4 The effects of silicosis can continue to develop even after the exposure ceases and they are irreversible. The progression of lung fibrosis can also lead to the development of lung cancer.
- 47.3.5 Simple silicosis is almost entirely without symptoms. In the early stages of the disease the lung nodules are small and discrete in the upper lung fields. As the disease progresses the nodules increase in number and size and also occupy the lower field. Although simple silicosis may never grow more serious, long-term exposure to silica dust may lead to complicated silicosis.
- 47.3.6 Complicated chronic silicosis is also called progressive massive fibrosis. The first symptoms may be shortness of breath with exercise, wheezing or sputum that causes coughing. Some people with the disease have no symptoms. Severe complicated silicosis can result in heart disease in addition to lung disease.
- 47.3.7 Accelerated silicosis is almost the same as chronic silicosis. However, it develops more quickly and the lung scars show up sooner. Accelerated silicosis can develop when exposure to large amounts of silica dust occurs over a short time period. Nodules may appear on a chest x-ray five years after the first exposure to silica dust and the disease can quickly worsen.
- 47.3.8 Acute silicosis is a lung disease that develops rapidly. As few as 8 to 18 months may elapse from the time of first exposure to the onset of symptoms, which include progressive shortness of breath, fever, cough and weight loss. There is a rapid progression of respiratory failure usually resulting in death within one or two years.

47.4 OCCUPATIONAL EXPOSURE

- 47.4.1 Occupational exposure to silica occurs through inhalation of small airborne particles of silica dust, mainly in the range of 5.0 μm to 0.5 μm , which are not expelled from the lung when inhaled. Instead, they remain in the lung and are deposited in lymph nodes, where over time, calcium can deposit in those nodes and settle along the rim of the lymph node. This condition is known as *eggshell* calcification. In some cases, silica particles are carried into the lungs where a scar may form around the particles. Over time, the hardened scars gradually start to show up on the chest x-ray as fibrosis of the lung.
- 47.4.2 In construction, worker exposure to silica is of particular concern because silica is the primary component of many construction materials. Some commonly used construction materials containing silica include:
 - 47.4.2.1 Abrasives used for blasting, brick, refractory brick, concrete, concrete block, cement, mortar, granite, sandstone, quartzite, slate, gunite, mineral deposits, rock and stone, sand, fill dirt, top soil and asphalt containing rock or stone.
- 47.4.3 Many construction activities can generate airborne silica-containing dust. In construction, abrasive blasting generates the most dust. Exposure to silica from abrasive blasting can result if the abrasive contains silica and/or if the material being blasted contains silica. Other activities that generate airborne dust include:
 - 47.4.3.1 Chipping, hammering and drilling of rock
 - 47.4.3.2 Crushing, loading, hauling and dumping of rock

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- 47.4.3.3 Sawing, hammering, drilling, grinding and chipping of concrete or masonry structures
- 47.4.3.4 Demolition of concrete and masonry structures
- 47.4.3.5 Dry sweeping or pressurized air blowing of concrete, rock, or sand dust
- 47.4.3.6 Road construction
- 47.4.3.7 Sweeping, cleaning and dismantling equipment
- 47.4.3.8 Tunneling, excavation and earth moving of soils with high silica content

47.5 CONTROLS

- 47.5.1 In order for silica to be a hazard, silica containing dust particles that are small enough to be inhaled (ex. respirable) must get into the air. The strategy for controlling the silica hazard can therefore be broken down into three basic approaches:
 - 47.5.1.1 Prevent silica dust from getting into the workplace air
 - 47.5.1.2 Remove silica dust present in the air
 - 47.5.1.3 If present, prevent workers from inhaling the dust
- 47.5.2 Engineering controls are methods of designing or modifying equipment, ventilation systems and processes to minimize the amount of a substance that gets into the workplace air.
- 47.5.3 Substitution can eliminate silica from certain processes by replacing it with a less toxic material.
- 47.5.4 When it is not possible to use a silica substitute, changing how a process is performed can lower silica exposures. Wet methods reduce dust and should be used whenever practical in cutting, grinding and drilling operations. Modify an abrasive operation to produce a coarser dust that is less hazardous because it settles more readily and is less likely to be trapped in the lungs if inhaled.
- 47.5.5 Warning signs should be posted in sufficient number to warn of the hazard. If it is an indoor operation, signs should be posted at each entrance to the work area. The signs should display the following information in large, clearly visible letters

DANGER – AUTHORIZED PERSONNEL ONLY
SILICA DUST HAZARD
PROPER RESPIRATORY PROTECTION MUST BE WORN

- 47.5.6 The generation of airborne silica containing dust should be controlled with a mechanical ventilation system, wetting or the use of a dust collection system. If silica containing airborne dust is generated, mechanical ventilation with an air flow sufficient to remove airborne contaminants from workers' breathing zone should be provided. The air flow of the mechanical ventilation system should be at least 50 cubic feet per minute per square foot of face area. If it is determined that none of these methods are practical, workers may be provided with respirators to protect them from exposure.



- 47.5.7 Dusty operations can be isolated by carrying them out in areas that are physically separated from non-dusty areas and keeping workers not involved in the operation out of the area. Where isolation is not effective, the process can be completely sealed off from the rest of the worksite.
- 47.5.8 The most effective use of ventilation to control a silica hazard is the removal of dust at its source (local exhaust ventilation). Often dust-generating tools are equipped with dust collection systems to prevent dust from spreading or becoming airborne. An essential component of these systems are the cleaning devices, such as filters, which will effectively remove the dust.
- 47.5.9 Barriers, partial enclosures and full enclosures are used to separate the work area from the rest of the project and in some cases, to prevent silica exposure to other workers not directly involved in the operation. Partial and full enclosures can also prevent or reduce the dispersion of silica into the surrounding work area and environment. Barriers should only be used where full and partial enclosures are not practicable.
 - 47.5.9.1 Ropes or barriers do not prevent the release of contaminated dust or other contaminants into the environment. However, they can be used to restrict access of workers who are not adequately protected with proper PPE and also prevent the entry of workers not directly involved in the operation. Ropes or barriers should be placed at a distance far enough from the operation that allows the silica containing dust to settle. If this is not achievable, warning signs should be posted at the distance where the silica containing dust settles to warn that access is restricted to persons wearing PPE. For example, the removal of mortar and cutting operations, ropes or barriers should be located at least 30 feet away. All workers within the barrier or warning sign zone must be adequately protected.

47.6 PERSONAL PROTECTIVE EQUIPMENT

- 47.6.1 The purpose of protective clothing is to prevent the contamination of regular clothing and the transportation of silica containing materials from the worksite. Clothing that is contaminated with silica dust should not therefore be worn home without cleaning.
- 47.6.2 Personal protective equipment such as gloves, coveralls and eye protection should be used to control silica exposures.
- 47.6.3 Sometimes engineering controls and work practices cannot lower the concentration of silica to non-hazardous levels and workers must wear respirators for protection.
- 47.6.4 Workers should be instructed and trained on the care and use of PPE before using it. Some workers may have a medical condition that causes them to have difficulty breathing when wearing a respirator. Such workers should not be assigned to do work that requires a respirator if they have written medical proof of their condition.
- 47.6.5 Where respirators are provided, they should be appropriate in the circumstances for the type and the concentration of airborne silica. Respirators should be selected in accordance with NIOSH assigned protection factors.
- 47.6.6 Respirators with a tight-fitting face piece must be fitted to the worker in such a way that there is an effective seal between the equipment and the worker's face.

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47.6.7 Where effective dust control measures are in place and where an employer can demonstrate on a continual basis that the silica exposure levels are below the PEL, respirators may not be required.

47.7 HYGIENE AND HOUSEKEEPING

47.7.1 Workers should therefore be able to wash and shower at the end of each shift. There should be no smoking, eating, drinking or chewing in contaminated areas and lunches should be stored in an uncontaminated area. It is therefore important to follow good work and hygiene practices whenever silica is present.

47.7.2 Good housekeeping is important wherever silica dust is generated. Containers of silica containing waste should be kept tightly covered to prevent dust from becoming airborne.

47.7.3 Surfaces should be kept clean by washing down with water or vacuuming with a vacuum equipped with a high-efficiency particulate air (HEPA) filter. Cleaning with compressed air or dry sweeping should be avoided.

47.7.4 Clean up after each operation is encouraged to prevent dust containing silica from spreading.

47.7.5 Compressed air or dry sweeping should be avoided when cleaning a work area.

47.7.6 Compressed air should not be used for removing dust from clothing.

47.7.7 Workers exposed to silica should be provided with or have access to washing facilities equipped with clean water, soap and individual towels.

47.7.8 Silica dust on personal protective clothing and equipment should be removed by damp wiping or HEPA vacuuming.

47.7.9 Contaminated personal protective clothing and equipment should be handled with care to prevent disturbing the silica dust and the generation of airborne silica dust.

47.7.10 Washing and laundering facilities must be suitable for handling silica contaminated laundry.

47.8 MONITORING

47.8.1 The presence of crystalline free silica in workplace air can be detected and measured using sophisticated techniques. These are often needed when the potential for dust production exists.

47.8.2 If dust containing crystalline free silica can be seen, an exposure problem is likely to exist. It should be remembered that respirable dust, which is only a portion of the total dust, cannot actually be seen by the unaided eye. If airborne dust can be seen, a problem is likely to exist. The procedures for monitoring, sampling and determining the concentrations of airborne silica at the worksite and a worker's exposure to airborne silica must be in accordance with standard methods for workplace air sampling and analysis.

47.8.3 The control program must include planned air monitoring of worker exposure. Results must be posted in a conspicuous place within the plant and provided to the safety director.



- 47.8.4 Records of individual exposure, which include calculated 40 hour time weighted averages must be retained. These should be representative of actual exposure.
- 47.8.5 These results provide a profile of actual worker exposure prior to and following establishment of the control program. The air monitoring strategy should be designed to obtain results from all workers who are exposed to silica.

47.9 MEDICAL SURVEILLANCE

- 47.9.1 Even with appropriate measures to control silica, some workers may still be affected. For this reason, periodic medical examinations are important for determining if the control measures in place are effective and if workers are suffering from any of the effects of silica exposure. This is known as medical surveillance and can be considered to be a method of early detection and prevention of silicosis.
- 47.9.2 Medical surveillance can be used as a preventive and remedial measure. By providing regular medical examinations and clinical tests on workers exposed to silica, subsequent adverse health effects can be detected. The examining physician can then alert the worker, the employer and the joint health and safety committee to exposure problems in the workplace that might otherwise go unrecognized. This should ensure that remedial steps will be taken.
- 47.9.3 Workers working with silica on a regular basis should have pre-placement medical examinations that include chest x-rays and pulmonary function tests, followed by periodic medical examinations. The frequency of the periodic examination will depend on the intensity and length of exposure to silica and will be decided by the examining physician. It need not be the same for all workers but will be done at least once every two years.

47.10 TRAINING

- 47.10.1 Training is required prior to using silica containing materials or working in an environment known to contain airborne concentrations of silica. Documented training will include:
 - 47.10.1.1 Information about the potential health effects and symptoms of exposure to respirable crystalline silica
 - 47.10.1.2 Safety data sheets for silica, quartz and applicable products containing silica.
 - 47.10.1.3 Purpose and set up of regulated areas marking the boundaries of work areas containing silica dust
 - 47.10.1.4 Discussion of the importance of substitution, engineering controls, work practices, good housekeeping and personal hygiene in reducing crystalline silica exposure
 - 47.10.1.5 Use and care of appropriate PPE, including respirators
 - 47.10.1.6 Expected exposures, controls in place to minimize exposure and how to set up, use, maintain the controls to be used
 - 47.10.1.7 Contents of this safety policy and procedure

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- 47.10.1.8 Proper hygiene and housekeeping
- 47.10.1.9 Availability of air monitoring and medical surveillance results
- 47.10.1.10 Use, care, maintenance, cleaning and disposal of personal respiratory protection
- 47.10.2 Training will be delivered to employees through a variety of means, including:
 - 47.10.2.1 New hire orientation
 - 47.10.2.2 Site specific orientations
 - 47.10.2.3 Equipment and task specific training
 - 47.10.2.4 Safety meetings
 - 47.10.2.5 Periodic refresher training

SPILL PREVENTION AND RESPONSE

Revision Date: 07/2018



SPILL PREVENTION AND RESPONSE

48.1 PURPOSE

48.1.1 The purpose of this policy is to protect and safeguard the environment during operations. This program is designed to set guidelines and principles as per the Oil Pollution Act in order to prevent releases to contact soil or navigable water (including sewer systems) and provide necessary environmental protection.

48.2 RESPONSIBILITIES

48.2.1 The safety director will maintain and modify the spill prevention policy as necessary. He will amend the policy whenever there is a change in facility design, construction, operation or maintenance that materially affects spill potential.

48.2.2 The safety director will respond to a reported incident in a timely manner and respond with appropriate action to control and remedy the incident. The safety director will document the spill by means of an incident investigation.

48.2.3 The safety director will provide oil spill kits as required by the spill prevention policy and check oil spill kit inventory on a semi-annual basis and restocking kits as necessary.

48.2.4 The project manager will ensure the operator performs inspections of tanks and that bulk storage containers as defined by EPA undergo tank integrity testing (thickness testing) every five years.

48.2.5 The project manager will notify the safety director of a spill or release and aid in the evaluation and determination on whether ZARNAS COMPANIES can clean the spill. If so, the safety director will coordinate cleanup efforts according to procedure.

48.2.6 Employees must maintain a clean work area and use good housekeeping best management practices in areas where chemicals may be used or stored. This includes, but is not limited to, clean and organized storage, labeling and secondary containment where necessary.

48.3 SPILL PREVENTION

48.3.1 Prepare for emergency control of chemical spills. Experience has shown that the accidental release of hazardous substances is sufficiently common to require pre-planning for procedures that will minimize exposure of personnel and property. Personnel protection is of primary importance and cleanup of spills is secondary.

48.3.2 Pre-planning is the best way to prevent spills or to control them when they do happen. In order to be prepared for an emergency, know the hazards of each facility or jobsite. Assess the risks before using any chemical. Have an emergency response plan for all jobs with hazardous materials. Post plan in a conspicuous area for employees and emergency responders.

48.3.3 In order to prevent or minimize the potential of spills and damage to the environment, ZARNAS COMPANIES will comply with state, federal and local rules and regulations.

48.3.4 Conduct operations in a manner that demonstrates our respect of the environment.

SPILL PREVENTION AND RESPONSE

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- 48.3.5 Provide training, emphasizing to employees that protecting the environment is a vital requirement of every job. Any person who has not been certified or who does not meet training requirements will be prohibited from engaging in hazardous waste operations.
- 48.3.6 Respond quickly and effectively to environmental issues.
- 48.3.7 Maintain an effective environmental spill prevention program.
- 48.3.8 Enforce the rules and regulations with an effective disciplinary action policy.
- 48.3.9 Hazards may be reduced by minimizing the amount of chemicals inventoried. Purchase only the amount of chemicals that are necessary in order to limit the amount of chemical inventory.
- 48.3.10 Handle chemicals safely and with care.

48.4 STORAGE AND HANDLING

- 48.4.1 Properly segregate chemicals to minimize the potential for a chemical reaction if a spill occurs.
- 48.4.2 Chemicals must be stored in the proper container and kept closed to minimize the potential for spillage, overflow and accumulation of rain or storm water.
- 48.4.3 Properly label all containers for easy identification.
- 48.4.4 Do not overload shelves.
- 48.4.5 Avoid storing chemicals on the floor or path where they may be struck by vehicles or powered industrial trucks.
- 48.4.6 Store cylinders with the protective cap in place and in the upright position.
- 48.4.7 Ensure good housekeeping practices in areas where chemicals are stored so that spills and damaged containers can be readily identified.
- 48.4.8 Safe chemical handling requires routine inspection of chemical storage areas and maintaining inventory control. Periodically inspect chemical storage areas for damaged containers and chemicals that are past their expiration date.
- 48.4.9 In areas where spills are likely to occur, secondary containment systems will be used to ensure that spills do not migrate to areas which may affect the environment. Any release of hazardous chemical in excess of 55 gallons must be reported within 48 hours after the person has knowledge of the discharge.

48.5 NOTIFICATION PROCEDURE

- 48.5.1 Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area and call for the assistance of trained personnel as soon as conditions permit. Communication procedures are based on type and quantity of materials spilled. Follow ZARNAS COMPANIES procedures and/or local emergency response plan for obtaining qualified assistance.

SPILL PREVENTION AND RESPONSE

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- 48.5.2 Report any hazardous substance spill into the environment upon discovery. The immediate supervisor must be contacted upon initial knowledge of the spill. The project manager and an operator representative must be contacted after initial notification to operator.
 - 48.5.2.1 This will set in motion a series of events based upon the information provided. Actions may range from dispatching additional trained personnel to the scene to activating local emergency response procedures. Ensure that local fire and police departments have been notified.
- 48.5.3 Locate and call the emergency response telephone number listed on the shipping document. The person answering the phone must be knowledgeable of the materials and mitigation actions to be taken or must have immediate access to a person who has the required knowledge.
- 48.5.4 Contact Chemtrec (1-800-424-9300) when the emergency response telephone number is not available from the shipping papers. Upon receipt of a call describing the nature of the incident, the agency will provide immediate advice on handling the early stages of the incident. The agency will also contact the shipper or manufacturer of the material for more detailed information and request onsite assistance when necessary.
- 48.5.5 Collect and provide as much of the following information as can safely be obtained to the chain-of-command and specialists contacted for technical guidance:
 - 48.5.5.1 First responder's name and call back telephone number
 - 48.5.5.2 Location and nature of problem (spill, fire, etc.)
 - 48.5.5.3 Name and identification number of material(s) involved
 - 48.5.5.4 Shipper/consignee/point of origin
 - 48.5.5.5 Carrier name, rail car or truck number
 - 48.5.5.6 Container type and size
 - 48.5.5.7 Quantity of material transported/released
 - 48.5.5.8 Local conditions (weather, terrain, proximity to schools, hospitals, waterways, etc.)
 - 48.5.5.9 Injuries and exposures
 - 48.5.5.10 Local emergency services that have been notified
- 48.5.6 Upon the safety director gathering information pertaining to the incident, the project manager will have full authority to implement and manage emergency response.

48.6 SPILL RESPONSE

- 48.6.1 Spills or releases must be reported immediately and handled in accordance with ZARNAS COMPANIES spill response protocol.

SPILL PREVENTION AND RESPONSE

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- 48.6.2 Assess the situation and obtain help. Notify immediate supervisor of the spill. The project manager will determine if governmental agency notification is necessary. The project manager will determine if the spill can be cleaned by ZARNAS COMPANIES or if additional resources are required. In the event of a large release, the project manager will report the spill to 9-1-1 or the National Response Center at 800-424-8802.
- 48.6.3 Approach cautiously from upwind. If wind direction allows, consider approaching the incident from uphill. Resist the urge to rush in; others cannot be helped until the situation has been fully assessed. Personnel in the close vicinity of the spill who will not assist in the response efforts should evacuate the area immediately.
- 48.6.4 Without entering the immediate hazard area, secure the scene by isolating the area and assuring the safety of people and the environment, keep people away from the scene and outside the safety perimeter. Allow enough room to move and remove your own equipment.
- 48.6.5 Use placards, container labels, shipping documents, SDSs and/or knowledgeable persons on the scene as valuable information sources to identify the immediate hazards. Evaluate all available information and consult the *Accidental Release* section of the SDS or follow the appropriate guide in the orange pages of the *Emergency Response Guidebook* to reduce immediate risks.
 - 48.6.5.1 Additional information, provided by the shipper or another authoritative source, may change some of the emphasis or details found in the ERG. The ERG provides only the most important and worst case scenario information for the initial response in relation to a family or class of dangerous goods. As more material specific information becomes available, the response should be tailored to the situation.
- 48.6.6 Decide on site entry. Any efforts made to rescue persons, protect property or the environment must be weighed against the possibility that the worker could become part of the problem. Enter the area only when wearing appropriate protective gear.
- 48.6.7 Do not walk into or touch spilled material. Avoid inhalation of fumes, smoke and vapors, even if no dangerous goods are known to be involved. Do not assume that gases or vapors are harmless because of lack of a smell - odorless gases or vapors may be harmful. Use caution when handling empty containers because they may still present hazards until they are cleaned and purged of all residues.
- 48.6.8 The safety director will document the spill following incident investigation procedures and collect the following information pertaining to the incident:
 - 48.6.8.1 Name of the facility and the owner or operator of the facility
 - 48.6.8.2 Name of the individual submitting the information
 - 48.6.8.3 Location of the facility
 - 48.6.8.4 Maximum storage handling capacity of the facility and normal daily throughput
 - 48.6.8.5 The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacements

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- 48.6.8.6 Description of the facility including maps, flow diagrams or a topographical map
- 48.6.8.7 The cause(s) of spill(s), including system failure analysis where failure occurred
- 48.6.8.8 Additional preventive measures taken or contemplated in order to minimize the possibility of recurrence
- 48.6.8.9 Date and year of initial facility operation
- 48.6.8.10 Witness statements

48.7 EMERGENCY RESPONSE

- 48.7.1 Respond in an appropriate manner. Establish a command post and lines of communication. Rescue casualties where possible and evacuate if necessary. Maintain control of the site. Continually reassess the situation and modify the response accordingly. The first duty is to consider the safety of people in the immediate area, including your own.
- 48.7.2 ZARNAS COMPANIES workers will be informed of the following information because of its importance to successful implementation of spill response procedures:
 - 48.7.2.1 Escape routes from the facility or site location
 - 48.7.2.2 Location of communication devices and available telephones to use for alerting all personnel and to mobilize outside fire protection or other emergency personnel.
 - 48.7.2.3 All personnel will be trained in emergency evacuation procedures by means of fire drills, safety meetings and in-house fire response discussions and training.
 - 48.7.2.4 Alternative means of escape if primary escape route is blocked by the emergency.
- 48.7.3 The regular evacuation route will be used if there is a spill. Workers will not take refuge inside a building unless emergency circumstances absolutely prevent escape via the main exit.
- 48.7.4 Workers designated to stay and control critical operations should clearly understand that they are to remain for active emergency purposes and not for refuge in a location presumed to be safe.

48.8 CLEANUP AND DISPOSAL

- 48.8.1 ZARNAS COMPANIES will oversee the cleanup of the spill where warranted. It is the responsibility of ZARNAS COMPANIES to provide spill cleanup supplies and perform cleanup activities.
- 48.8.2 Spills should be cleaned as quickly and effectively as possible without jeopardizing worker safety. Employees should cleanup spills themselves only if they are properly trained and protected.
- 48.8.3 Spill control equipment should be used to properly cleanup spills.
- 48.8.4 Follow the SDS for proper protection of employees and the correct method of spill cleanup.
- 48.8.5 Damaged containers should be immediately repaired, up-righted or over-packed.

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- 48.8.6 Containment must be established especially if any drains, streams or other water supplies are in the close proximity so that runoff cannot reach them.
- 48.8.7 If an employee feels unsure about any chemical cleanup they should immediately evacuate the area and alert a supervisor to obtain additional resources.
- 48.8.8 ZARNAS COMPANIES will transport oil-dry materials from the nearest spill kit location to the spill.
- 48.8.9 Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations.
- 48.8.10 Whatever cannot be saved for recovery or recycling should be managed in an approved and appropriate waste disposal facility.
- 48.8.11 Once the spill has been contained and all free oil has been absorbed/removed using absorbent pads and pillows, place all materials into a garbage bag or other sealable container. The drums will be labeled, dated and disposed of or recycled through an approved contractor.
- 48.8.12 Contaminated debris must be disposed of in accordance with applicable disposal regulations and ZARNAS COMPANIES waste management requirements.

48.9 SPILL KITS

- 48.9.1 Proper materials will be provided to properly cleanup small spills and releases. Spill kits must contain appropriate materials to properly cleanup all types of materials that are expected to be cleaned. Considerations must be made for both the type and quantity of materials.
- 48.9.2 Spill kits will contain, but not limited to, the following:
 - 48.9.2.1 10 white absorbents for oil
 - 48.9.2.2 10 gray absorbents for all chemical spills
 - 48.9.2.3 Plastic bags with waste labels
 - 48.9.2.4 6 gallon empty recovery drum
 - 48.9.2.5 Vermiculite or other absorbent
 - 48.9.2.6 Broom and pan
 - 48.9.2.7 Personnel protective equipment (gloves, goggles, dust/mist mask)
- 48.9.3 Must be labeled and stored in easily accessible area close to the chemical storage area.
- 48.9.4 Must be periodically inventoried to be certain that all the necessary items are available.
- 48.9.5 Any missing material should be replaced immediately.

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48.10 TRAINING

- 48.10.1 All chemical handling workers will be properly instructed in the operation and maintenance of equipment to prevent spills. Supervisors will observe the performance of all employees and advise them of appropriate operational and maintenance procedures when required.
- 48.10.2 Training requirements will vary by the operation. There are specific training requirements for cleanup personnel, equipment operators, general laborers, supervisory employees and various levels of emergency response personnel. Employees will not begin work until they have received training specific to the work that they will be assigned.
- 48.10.3 To ensure the proper cleanup and disposal of chemical spills employees will receive proper training. Training for spill cleanup will include:
 - 48.10.3.1 Hazard communication training
 - 48.10.3.2 Materials available for use
 - 48.10.3.3 Location of SDSs
 - 48.10.3.4 Location of spill kits
 - 48.10.3.5 Proper spill cleanup procedures
 - 48.10.3.6 HAZWOPER awareness training
 - 48.10.3.7 ZARNAS COMPANIES's *Spill Prevention* policy
 - 48.10.3.8 Communication procedures
 - 48.10.3.9 Proper waste disposal
- 50.10.4 First responders at the *awareness level* (individuals likely to witness or discover a hazardous substance release and initiate the emergency response) must demonstrate competency in such areas as recognizing the presence of hazardous materials in an emergency, the risks involved and the role they should perform.
- 50.10.5 First responders at the *operations level* (individuals with the purpose of protecting property, persons or the nearby environment without actually trying to stop the release) must have eight hours of training plus awareness level competency or demonstrate competence in their role.
- 50.10.6 ZARNAS COMPANIES employees who are designated as hazardous waste operations personnel that assist operations with non-emergency related small scale cleanups must have 40 hours of initial training before performing work cleanup activities. An eight hour annual refresher is required.
- 50.10.7 Managers and supervisors directly responsible for cleanup operations must have an additional eight hours of specialized training in waste management.

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- 50.10.8 On-scene incident commanders (who assume control of the incident scene beyond the awareness level) must have 24 hours of training equal to the operations level and demonstrate competence in specific areas such as how to implement the response system, how to select PPE and have knowledge of applicable state and federal regulations. The on-scene incident commander will be certified to perform this role. An eight hour annual refresher is required.
- 50.10.9 Additional site specific training must be taken for certain hazardous materials/environments that may be encountered at different sites.
- 50.10.10 All training is documented. Persons completing specific training for hazardous waste operations will be certified. Those not certified or without proper experience will be prohibited from engaging in those operations specified by the standard.

STOP WORK AUTHORITY

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STOP WORK AUTHORITY

49.1 PURPOSE

49.1.1 The purpose of this policy is to establish responsibility and authority of any individual to stop work when an unsafe condition or act could result in an undesirable event.

49.2 RESPONSIBILITIES

49.2.1 Management

49.2.1.1 Establish clear expectations and accountability, and create the culture necessary to promote stop work authority (SWA). Model SWA behavior and ensure that there is support, *not* reprisal, for using stop work authority

49.2.2 Supervisor

49.2.2.1 Create a culture where SWA is exercised freely, honor SWA requests, resolve issues before operations resume and recognize proactive participation

49.2.3 Employee

49.2.3.1 Initiate stop work and support interventions of others

49.2.4 Safety director

49.2.4.1 Training, documentation, compliance and support of the *Stop Work Authority Policy*.

49.3 SITUATIONS THAT INITIATE STOP WORK

49.3.1 All employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of safety risk exist.

49.3.2 Unsafe conditions

49.3.3 Incident occurs

49.3.4 Significant near-loss

49.3.5 Emergency situation

49.3.6 Alarm sounds

49.3.7 Change in conditions

49.3.8 Change in scope of work

49.3.9 Anytime anyone feels that personnel, the environment or equipment is at risk

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49.4 HOW TO STOP WORK

- 49.4.1 When a worker identifies a perceived unsafe condition, act, error, omission or lack of understanding that could result in an undesirable event, they must immediately initiate a stop work intervention with the person(s) potentially at risk.
- 49.4.2 If the affected worker(s) are not in immediate risk and the supervisor is readily available, the stop work action should be coordinated through the supervisor. If the supervisor is not readily available or someone is at immediate risk, the intervention should be initiated directly with those at risk.
- 49.4.3 Stop work interventions should be initiated in a positive manner by briefly introducing yourself and starting a conversation with, "I am using my stop work authority because..." Using this phrase will clarify the user's intent and set proper expectations.
- 49.4.4 Notify affected personnel and supervision of the stop work. If necessary, stop associated work, remove workers from the area, stabilize the situation and make the area as safe as possible.
- 49.4.5 Affected parties will discuss and gain agreement on the stop work issue.
- 49.4.6 If determined and agreed that the task or operation is okay to proceed as is (ex. the stop work initiator was unaware of certain facts or procedures), the affected persons should thank the initiator for their concern and proceed with the work.
- 49.4.7 If determined and agreed that the stop work issue is valid, then every attempt should be made to resolve the issue to affected persons' satisfaction prior to starting work. No work will resume until all stop work issues and concerns have been adequately addressed.
- 49.4.8 If stop work cannot be resolved immediately, work is suspended until proper resolution is achieved. When opinions differ regarding the validity of the stop work issue or adequacy of the resolution actions, the person in charge at the location will make the final determination. Details regarding differences of opinion and resolution actions should be included in the documented report.
- 49.4.9 Positive feedback should be given to affected personnel regarding resolution of the stop work issue. Under no circumstances should retribution be directed at any person(s) who exercise in good faith their stop work authority as detailed in this policy.

49.5 CONFLICT RESOLUTION

- 49.5.1 When opinions differ regarding the validity of a stop work intervention or the decision to resume work, a clear protocol must be established to properly resolve the conflict.
- 49.5.2 Persons with proper authority (ex. next level of management, safety director) who are not party to the conflict should be identified to resolve such issues. This proper authority may not reside at the location where the conflict occurred.

49.6 REPORTING

- 49.6.1 Stop work interventions are to be reported, formally documented for lessons learned and corrective measures and will be reviewed by a supervisor or manager in order to:

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- 49.6.1.1 Measure participation
- 49.6.1.2 Determine quality of interventions and follow up
- 49.6.1.3 Trend common issues and identify opportunities for improvement
- 49.6.1.4 Facilitate sharing of lessons learned
- 49.6.1.5 Contribute to recognition schemes
- 49.6.2 Reporting can be achieved either by developing a stand-alone reporting process or using the incident reporting processes. Whatever method is selected, separate detail regarding stop work interventions should be maintained as a demonstration of process maturity and value.
- 49.6.3 Observers are encouraged to document when stop work authority is used during an observation.
- 49.6.4 When opinions differ regarding the validity of the stop work issue or adequacy of the resolution actions, the person in charge at the location will make the final determination.

49.7 FOLLOW UP

- 49.7.1 Stop work interventions that identified safety concerns should be addressed to the satisfaction of all involved persons prior to the resumption of work.
- 49.7.2 Although most issues can be adequately resolved in a timely manner at the jobsite, occasionally additional investigation and corrective actions may be required to identify and address root causes.
- 49.7.3 Corrective actions should be addressed and followed through to completion.

49.8 REWARD AND RECOGNITION

- 49.8.1 Consistent with our reward and recognition culture, a recognition scheme should be developed to positively reinforce desired behaviors (ex. the timely execution and response to stop work interventions). Conscious effort should be given to recognize individuals or work groups that exercise their authority to stop work in a manner consistent with company policy.
- 49.8.2 Many opportunities exist to provide such recognition as:
 - 49.8.2.1 Individual recognition by supervisor for each intervention
 - 49.8.2.2 Regular peer recognition of *good stops* in safety meetings
 - 49.8.2.3 Periodic public recognition of company-wide good stops published on company newsletters, bulletins or other such communications
 - 49.8.2.4 Award of nominal prizes for proactive participation
- 49.8.3 On occasions where there was a missed stop work opportunity, recognizing and providing feedback will ensure that everyone in the workforce understands its importance and the role it plays in preventing recurrence.

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49.8.4 Any form of retribution or intimidation directed at any individual or company for exercising their right to issue a stop work authority will not be tolerated.

49.8.5 Recognizing things done right, saying thanks for a job well done and letting employees know their efforts are appreciated goes a long way toward promoting and encouraging repeated outstanding efforts and fostering a positive work environment.

49.9 COMMUNICATION

49.9.1 The ability to effectively stop work when necessary is a critical component in our overall safety culture. In addition, an effective stop work program includes the written and verbal reinforcement of these expectations. This can be accomplished through many means including safety meetings, SWA posters at the worksite, SWA pocket cards, as well as SWA drills.

49.10 MEASURING PARTICIPATION

49.10.1 To ensure that we are using SWA at various worksites, we should recognize and evaluate its use. The *SWA Documentation Form* can be used to document SWA efforts for sharing and communication with individual work groups.

49.11 TRAINING

49.11.1 Awareness training with regard to SWA policy, expectations and processes should be developed and administered at a frequency required to maintain competency.

49.11.2 Employees must receive SWA training before initial assignment.

49.11.3 SWA training is covered at awareness training courses, orientations, in-house training and during safety meetings for all employees.

49.11.4 The training must be documented including the employee name, the dates of training and subject.

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WORKING ALONE

50.1 PURPOSE

50.1.1 The purpose of this policy is to provide for measures to protect the health and safety of, and minimize risk to, any worker at a workplace who is the only employee at that facility, in circumstances where assistance is not readily available to the worker in the event of an injury, ill health or emergency. Strict adherence to this policy will help to meet health and safety legal requirements and demonstrate due diligence in working alone situations.

50.2 POTENTIAL HAZARDS

50.2.1 One of the first steps in creating a working alone procedure is to make a list of any jobs or tasks that are not appropriate for a single employee. These tasks may include factors such as:

- 50.2.1.1 Extreme heights
- 50.2.1.2 Use of fall protection
- 50.2.1.3 Use of respiratory equipment
- 50.2.1.4 Operation of power-lift equipment
- 50.2.1.5 Confined space
- 50.2.1.6 Hazardous substances or materials
- 50.2.1.7 High voltage electricity
- 50.2.1.8 Hot work

50.2.2 There are some high risk activities where safety regulations require that at least one other person be present.

- 50.2.2.1 Confined space work where an attendant needs to be present, as well as someone dedicated to the rescue role
- 50.2.2.2 Electrical work at or near exposed live conductors where at least two people are required

50.3 HAZARD ASSESSMENT

50.3.1 ZARNAS COMPANIES will create a list of jobs where employees may be required to work alone and complete a risk/hazard assessment of each job to determine if it is appropriate for a single employee. The risk/hazard assessment should include the following considerations:

- 50.3.1.1 Is it reasonable for the person to be alone?
- 50.3.1.2 Is the work in a remote or isolated location?

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- 50.3.1.3 Is the job after hours? (Could it be done during normal hours?)
 - 50.3.1.4 Are there extreme temperatures?
 - 50.3.1.5 Is the job in the warehouse when other workers are gone?
 - 50.3.1.6 Is the job in a basement, away from other workers?
 - 50.3.1.7 Is the employee driving a vehicle alone for an extended period of time?
 - 50.3.1.8 What consequences could result from a worst case scenario? (Consider all possible *what if* factors.)
 - 50.3.1.9 What is the likelihood for other persons to be in the area?
 - 50.3.1.10 Is there a possibility that a critical injury or incident could prevent the employee from calling for help or leaving the workplace?
 - 50.3.1.11 What is the expected emergency response time?
 - 50.3.1.12 What if a worker has physical handicaps or preexisting medical conditions?
- 50.3.2 The assessment should be repeated on a regular basis to account for the possibility of hazards changing over time. Once the assessment is completed, it should be communicated to both supervisors and employees.

50.4 GENERAL SAFETY

- 50.4.1 Working alone can be safe if procedures are in place, are communicated to employees and are strictly followed.
- 50.4.2 While it is acceptable for employees to work alone (unless a federal, state, or local agency prohibits it), proper steps must be taken up front to provide them and others with procedures to follow to ensure their health and safety.
- 50.4.3 The first step in developing a working alone procedure is defining what the term means. Different companies may refer to a single-worker situation as an employee working alone, a lone worker or a single-worker job. Regardless of the terminology, the concept generally refers to a situation where one person is performing a task by himself, he cannot be seen or heard by other workers, and assistance is not readily available. The term is not exclusively used to refer to an entire job - it can also be used if a single employee is completing a section of a task and, in that time period, does not have contact with other workers.
- 50.4.4 Employers also need to be aware of any specific law that prohibits lone working applying in their industry. Examples include supervision in diving operations, vehicles carrying explosives and fumigation work.
- 50.4.5 Check that lone workers have no medical conditions which make them unsuitable for working alone. If a worker has a medical condition, employers should seek medical advice if necessary.

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Consider both routine work and foreseeable emergencies that may impose additional physical and mental burdens on an individual.

- 50.4.6 Employers should set the limits to what can and cannot be done while working alone. They should ensure workers are competent to deal with the requirements of the job and are able to recognize when to seek advice from elsewhere.
- 50.4.7 The extent of supervision required depends on the risks involved and the ability of the lone worker to identify and handle health and safety issues.
- 50.4.8 The level of supervision needed is a management decision, which should be based on the findings of a risk assessment (ex. the higher the risk, the greater the level of supervision required). It should not be left to individuals to decide whether they need assistance.
- 50.4.9 Where a worker is new to a job, undergoing training, doing a job that presents specific risks or dealing with new situations, it is advisable for them to be accompanied when they first start the job.
- 50.4.10 While ZARNAS COMPANIES does not have such situations, it may become apparent, after further inspection, that there are times when an employee is indeed working alone. It may be as simple as an employee completing a task in a basement or isolated area alone or driving a truck without another employee present. If there is no procedure to check on these employees, these examples might qualify as working-alone situations. While working alone may not be hazardous, depending on the circumstances, it is important for ZARNAS COMPANIES supervisors to always be able to account for workers.
- 50.4.11 ZARNAS COMPANIES does not prohibit working alone, but utilize a procedure that is direct and clear to all employees and that maintains the highest degree of safety when employees have to work alone. ZARNAS COMPANIES supervisors need to ensure employees who are working alone have an effective way of communicating with others who can respond if there is an emergency or the employee is injured.

50.5 CONTROLS

- 50.5.1 Employers should take account of normal work and foreseeable emergencies (ex. fire, equipment failure, illness and accidents). Employers should identify situations where people work alone and consider the following:
 - 50.5.1.1 Does the workplace present a specific risk to the lone worker? (Ex. due to temporary access equipment, such as portable ladders or trestles that one person would have difficulty handling)
 - 50.5.1.2 Is there a safe way in and out for one person? (Ex. for a lone person working out of hours where the workplace could be locked up)
 - 50.5.1.3 Is there machinery involved in the work that one person cannot operate safely?
 - 50.5.1.4 Are chemicals or hazardous substances being used that may pose a particular risk to the lone worker?

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- 50.5.1.5 Does the work involve lifting objects too large for one person?
- 50.5.1.6 Is there a risk of violence or aggression?
- 50.5.1.7 Are there any reasons why individual might be more vulnerable than others and be particularly at risk working alone? (ex. young, pregnant, disabled or a trainee)
- 50.5.1.8 If the lone worker's first language is not English, are suitable arrangements in place to ensure clear communications, especially in an emergency?
- 50.5.2 Engineering controls minimize risk by modifying the physical work environment. This may involve the physical arrangement, design, or alteration of workstations, equipment, materials, production facilities or other aspects of the environment.
- 50.5.3 If they cannot eliminate the hazard, they should immediately report it to their supervisor, who will ensure that corrective action is taken.
- 50.5.4 Administrative controls minimize risk by modifying work processes or activities. This may involve the provision, use and scheduling of work activities and resources in the workplace, including planning, organizing, staffing and coordinating. For example, rearranging the work schedule so more than one employee is always on shift.
- 50.5.5 Modify equipment or the design of the workplace.
- 50.5.6 Select appropriate safety features when purchasing or replacing equipment.
- 50.5.7 Develop, modify and implement safe work procedures. Make sure workers follow the procedures. p
- 50.5.8 Make sure workers use personal protective equipment.
- 50.5.9 Schedule deliveries when there is more than one worker to help with lifting.
- 50.5.10 Make sure that only trained and experienced people perform hazardous tasks.

50.6 PROCEDURES

- 50.6.1 The notion of employees working alone is not a new concept and is fairly common within construction and related industries. While there may be risk, working alone can be a safe and acceptable situation if an established procedure is followed. If there is no procedure, or if employees do not follow the appropriate steps, a working-alone situation may become unsafe.
- 50.6.2 Employers have a duty to assess risks to lone workers and take steps to avoid or control risks where necessary. This must include:
 - 50.6.2.1 Involving workers when considering potential risks and measures to control them
 - 50.6.2.2 Taking steps to ensure risks are removed where possible or putting in place control measures (ex. carefully selecting work equipment to ensure the worker is able to perform the required tasks in safety)

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- 50.6.2.3 Instruction, training and supervision
- 50.6.2.4 Reviewing risk assessments periodically or when there has been a significant change in working practice
- 50.6.2.5 Being aware that some tasks may be too difficult or dangerous to be carried out by an unaccompanied worker
- 50.6.2.6 Where a lone worker is working at another employer's workplace, informing that other employer of the risks and the required control measures
- 50.6.2.7 When a risk assessment shows it is not possible for work to be conducted safely by a lone worker, addressing that risk by making arrangements to provide help or backup
- 50.6.3 Risk assessment should help employers decide on the right level of supervision. There are some high risk activities where at least one other person may need to be present.
 - 50.6.3.1 Working in a confined space, where a supervisor may need to be present, along with someone dedicated to the rescue role
 - 50.6.3.2 Working at or near exposed live electricity conductors
 - 50.6.3.3 Working in the health and social care sector dealing with unpredictable client behavior and situations
- 50.6.4 Where a worker is working alone, the employer shall develop and implement written procedures to ensure, as far as is reasonably practicable, the health and safety of the worker from risks arising out of, or in connection with, the work assigned.
- 50.6.5 Specify the time intervals for checking on the worker. Higher risk activities require shorter time intervals between communications with the contact person.
- 50.6.6 Specify the person responsible for contacting the worker and recording the results of the contact.
- 50.6.7 Outline the process to be followed if the worker cannot be contacted, including provisions for an emergency rescue.
- 50.6.8 Provide for checking with the worker at the end of the worker's shift.
- 50.6.9 It is strongly recommended that handling of hazardous substances or performing hazardous activities be prohibited when the worker is working alone.
- 50.6.10 Work involving entry into confined spaces must never be conducted alone.
- 50.6.11 Procedures must be put in place to monitor lone workers as effective means of communication are essential. These may include:
 - 50.6.11.1 Supervisors periodically visiting and observing people working alone

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- 50.6.11.2 Pre-agreed intervals of regular contact between the lone worker and supervisor, using phones, radios or email, bearing in mind the worker's understanding of English
- 50.6.11.3 Manually operated or automatic warning devices which trigger if specific signals are not received periodically from the lone worker (ex. staff security systems).
- 50.6.11.4 Implement robust system to ensure a lone worker has returned to their base or home once their task is completed.
- 50.6.12 Employers must develop and implement a procedure for checking on the well-being of employees who are working alone or in isolation. A person check procedure must include the following:
 - 50.6.12.1 The designated person who will establish contact and record results
 - 50.6.12.2 Time intervals between checks
 - 50.6.12.3 A check at the end of the shift
 - 50.6.12.4 A procedure to follow in case the employee cannot be contacted
- 50.6.13 Supervision of health and safety can often be carried out when checking the progress and quality of the work. It may take the form of periodic site visits combined with discussions in which health and safety issues are raised.
 - 50.6.13.1 Supervisor periodically visiting and observing people working alone.
 - 50.6.13.2 Regular contact between lone worker and supervision using either telephone or radio.
 - 50.6.13.3 Automatic warning devices which operate if specific signals are not received periodically from the lone worker, such as systems for security staff.
 - 50.6.13.4 Other devices designed to raise the alarm in the event of an emergency and which are operated manually or automatically by the absence of activity.
 - 50.6.13.5 Checks that a lone worker has returned to their base or home on completion of a task.
 - 50.6.13.6 Regular contact between the lone worker and supervision using cell phone, computer, satellite, webcams, RFID technology or PDAs.
 - 50.6.13.7 Other devices designed to raise the alarm in the event of an emergency and which are operated manually or automatically by the absence of activity.

50.7 TRAINING

- 50.7.1 Training is particularly important where there is limited supervision to control, guide and help in uncertain situations.
- 50.7.2 Training may also be crucial in enabling people to cope in unexpected circumstances and with potential exposure to violence and aggression.

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- 50.7.3 Lone workers are unable to ask more experienced colleagues for help, so extra training may be appropriate. They need to be sufficiently experienced and fully understand the risks and precautions involved in their work and the location that they work in.
- 50.7.4 All workers need supervised, hands-on training in safe work procedures that apply to their jobs. Employees must be properly trained before they start a job. Young and new workers need special attention because they are at more risk of injury than their older or more experienced counterparts.
- 50.7.5 Training should include how to:
 - 50.7.5.1 Perform tasks safely
 - 50.7.5.2 Operate machines and equipment safely
 - 50.7.5.3 Use and maintain any required personal protective equipment
 - 50.7.5.4 Identify and report hazards
- 50.7.6 Training is particularly important where there is limited supervision to control, guide and help in situations of uncertainty.
- 50.7.7 Training may be critical to avoid panic reactions in unusual situations.
- 50.7.8 Ensure employees are competent to deal with circumstances which are new, unusual or beyond the scope of training, such as when to stop work and seek advice from a supervisor and how to handle potential workplace violence.
- 50.7.9 Lone workers should be capable of responding correctly to emergencies.
- 50.7.10 Risk assessment should identify foreseeable events.
- 50.7.11 Emergency procedures should be established and employees trained in them.
- 50.7.12 Information about emergency procedures and danger areas should be given to lone workers.
- 50.7.13 Lone workers should have access to adequate first aid facilities and mobile workers should carry a first aid kit suitable for treating minor injuries. Occasionally risk assessment may indicate that lone workers need training in first aid.

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51.1 PURPOSE

51.1.1 The purpose of this policy is to provide employees guidance that will maintain an environment that is free of violence and the threat of violence. ZARNAS COMPANIES wants to prevent internal or external theft of information or equipment, as well as preventing violence of any sort from occurring either between coworkers, from a non-employee to an employee or company assets or from an employee to the company. ZARNAS COMPANIES maintains a zero tolerance standard of violence in the workplace.

51.2 RESPONSIBILITIES

51.2.1 The safety department will act as a threat assessment/crisis management team that will, along with other duties, help to implement this policy, oversee company response to and evaluate any instance of, reported workplace violence.

51.2.2 Supervisors are responsible for ensuring that their employees abide by all security policies and procedures, as well as notifying the safety department of any security related problems.

51.2.3 Employees are responsible for complying with all security policies and procedures and notifying their immediate supervisor or the safety department of any security-related problems.

51.3 PROHIBITED BEHAVIOR

51.3.1 Violent behavior of any kind or threats of violence, either implied or direct, are prohibited at ZARNAS COMPANIES, in properties and at company sponsored events. Such conduct by a ZARNAS COMPANIES employee will not be tolerated.

51.3.2 Retaliation against persons who makes a complaint regarding violent behavior or threats of violence made to them are also prohibited.

51.3.3 In keeping with this policy, ZARNAS COMPANIES I prohibits employees from engaging in any act either on company premises or during work-related duties that:

51.3.3.1 Threatens the safety of an employee and/or customer.

51.3.3.2 Affects the health, life or well-being of an employee and/or customer.

51.3.3.3 Results in damage to company, employee or customer property.

51.3.4 Such acts include, but are not limited to:

51.3.4.1 Direct threats or physical intimidation

51.3.4.2 Implications or suggestions of violence

51.3.4.3 Stalking

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- 51.3.4.4 Possession of weapons of any kind on company property, including parking lots, other exterior premises or while engaged in activities for ZARNAS COMPANIES in other locations or at company sponsored events, unless such possession or use is a requirement of the job
- 51.3.4.5 Assault of any form
- 51.3.4.6 Physical restraint, confinement
- 51.3.4.7 Dangerous or threatening horseplay
- 51.3.4.8 Loud, disruptive or angry behavior or language that is clearly not part of the typical work environment
- 51.3.4.9 Blatant or intentional disregard for the safety or well-being of others
- 51.3.4.10 Commission of a violent felony or misdemeanor on company property
- 51.3.4.11 Any other act that a reasonable person would perceive as constituting a threat of violence
- 51.3.4.12 Threatening, intimidating, coercing, harassing or assaulting an employee or customer.
- 51.3.4.13 Sexually harassing an employee or customer
- 51.3.4.14 Carrying concealed weapons on company property or concealing a weapon on company property
- 51.3.4.15 Allowing unauthorized persons access to the building or confidential information without management permission
- 51.3.4.16 Using, duplicating or possessing keys to the building or offices within the building without authorization
- 51.3.4.17 Stealing or attempting to steal, property of the company, an employee or customer
- 51.3.4.18 Damaging or attempting to damage, property of the company, coworker or customer

51.4 ANTI HARRASSMENT

- 51.4.1 Harassment, including sexual harassment, is prohibited by federal and state laws. This policy prohibits harassment of any kind and the company will take appropriate action swiftly to address any violations of this policy. The definition of harassment is verbal or physical conduct designed to threaten, intimidate or coerce. Also, verbal taunting (including racial and ethnic slurs) that, in the employee's opinion, impairs his or her ability to perform his or her job.
 - 51.4.1.1 Verbal: Comments, epithets, slurs or negative stereotyping that are not flattering or are unwelcome regarding a person's nationality, origin, race, color, religion, gender, sexual orientation, age, body disability or appearance.

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- 51.4.1.2 Nonverbal: Distribution, display or discussion of any written or graphic material that ridicules, denigrates, insults, belittles or shows hostility or aversion toward an individual or group because of national origin, race color, religion, age, gender, sexual orientation, pregnancy, appearance disability, gender identity, marital or other protected status.
- 51.4.2 Sexual harassment in any form is prohibited under this policy. Sexual harassment is a form of discrimination and is unlawful under Title VII of the Civil Rights Act of 1964. According to the Equal Employment Opportunity Commission (EEOC), sexual harassment is defined as "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature...when...submission to or rejection of such conduct is used as the basis for employment decisions...or such conduct has the purpose or effect of...creating an intimidating, hostile or offensive working environment."
- 51.4.3 Sexual harassment includes unsolicited and unwelcome sexual advances, requests for sexual favors or other verbal or physical conduct of a sexual nature, when such conduct:
 - 51.4.3.1 Is made explicitly or implicitly a term or condition of employment.
 - 51.4.3.2 Is used as a basis for an employment decision.
 - 51.4.3.3 Unreasonably interferes with an employee's work performance or creates an intimidating, hostile or otherwise offensive environment.
- 51.4.4 Normal, courteous, mutually respectful, pleasant, non-coercive interactions between employees, including men and women, that are acceptable to and welcomed by both parties, are not considered to be harassment. There are basically two types of sexual harassment:
 - 51.4.4.1 *Quid pro quo* harassment, where submission to harassment is used as the basis for employment decisions. Employee benefits such as raises, promotions, better working hours, etc., are directly linked to compliance with sexual advances. Therefore, only someone in a supervisory capacity (with the authority to grant such benefits) can engage in quid pro quo harassment.
 - 51.4.4.2 *Hostile work environment* where harassment creates an offensive and unpleasant working environment. Hostile work environment can be created by anyone in the work environment, whether it be supervisors, other employees or customers. Hostile environment harassment consists of verbiage of a sexual nature, unwelcome sexual materials or even unwelcome physical contact as a regular part of the work environment. Texts, emails, cartoons or posters of a sexual nature, vulgar or lewd comments or jokes or unwanted touching or fondling all fall into this category.
- 51.4.5 The office strongly discourages romantic or sexual relationships between a management or other supervisory employee and his or her staff (an employee who reports directly or indirectly to that person) because such relationships tend to create compromising conflicts of interest or the appearance of such conflicts. Such a relationship may give rise to the perception by others that there is favoritism or bias in employment decisions affecting the staff employee. Given the uneven balance of power within such relationships, consent by the staff member is suspect and may be viewed by others or, at a later date, by the staff member him/herself as having been given as the

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result of coercion or intimidation. The atmosphere created by such appearances of bias, favoritism, intimidation or coercion or exploitation undermines the spirit of trust and mutual respect that is essential to a healthy work environment. If there is such a relationship, parties need to be aware that one or both may be moved to a different department or other actions may be taken.

- 51.4.6 If an employee enters into a consensual relationship that is romantic or sexual in nature with a member of their staff (an employee who reports directly or indirectly to them) or if one of the parties is in a supervisory capacity in the same department in which the other party works, the parties must notify the manager. Although the parties may feel that what they do during non-working hours is their business and not the business of the office, because of potential issues regarding *quid pro quo* harassment, the office has made this a mandatory requirement. This requirement does not apply to employees who do not work in the same department nor to parties who do not supervise or otherwise manage responsibilities over the other.
- 51.4.7 No hardship, loss or benefit and no penalty may be imposed on an employee as punishment for:
 - 51.4.7.1 Filing or responding to a bona fide complaint of discrimination or harassment.
 - 51.4.7.2 Appearing as a witness in the investigation of a complaint.
 - 51.4.7.3 Serving as an investigator.
- 51.4.8 Retaliation or attempted retaliation is a violation of this policy and anyone who does so will be subject to severe sanctions up to and including termination.

51.5 COMPLAINT PROCEDURE

- 51.5.1 The following complaint procedure will be followed in order to address a complaint regarding harassment, discrimination or retaliation.
 - 51.5.1.1 A person who feels harassed, discriminated or retaliated against may initiate the complaint process by filing a written and signed complaint with ZARNAS COMPANIES management. No formal action will be taken against any person under this policy unless a written and signed complaint is on file containing sufficient details to allow HR representative to determine if policy may have been violated. The complainant (the employee making the complaint) may use the complaint form. If a supervisor or manager becomes aware that harassment or discrimination is occurring, either from personal observation or as a result of an employee coming forward, the supervisor or manager should immediately report it to the HR representative.
 - 51.5.1.2 Upon receiving the complaint, or being advised by a supervisor or manager that violation of this policy may be occurring, the HR representative will notify the company, and review the complaint with the company's legal counsel.
- 51.5.2 Within five working days of receiving the complaint, the HR representative will:
 - 51.5.2.1 Notify the person charged (respondent) of a complaint.

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- 51.5.2.2 Initiate the investigation to determine whether there is a reasonable basis for believing that the alleged violation of this policy occurred.
- 51.5.3 During the investigation, the HR representative, together with legal counsel or other management employee, will interview the complainant, the respondent and any witnesses to determine whether the alleged conduct occurred.
- 51.5.4 Within 15 business days of the complaint being filed (or the matter being referred to the HR representative, the HR representative or other person conducting the investigation will conclude the investigation and submit a report of his or her findings to the company.
- 51.5.5 If it is determined that harassment or discrimination in violation of this company's policy has occurred, the HR representative will recommend appropriate disciplinary action. The appropriate action will depend on the following factors:
 - 51.5.5.1 The severity, frequency and pervasiveness of the conduct
 - 51.5.5.2 Prior complaints made by the complainant
 - 51.5.5.3 Prior complaints made against the respondent
 - 51.5.5.4 The quality of the evidence (first-hand knowledge, credible corroboration etc.)
- 51.5.6 If the investigation is inconclusive or it is determined that there has been no harassment or discrimination in violation of this policy, but some potentially problematic conduct is revealed, preventative action may be taken.
- 51.5.7 Within five days after the investigation is concluded, the HR representative will meet with the complainant and the respondent separately in order to notify them in person of the findings of the investigation and to inform them of the action being recommended by the HR representative.
- 51.5.8 The complainant and respondent may submit statements to HR challenging the factual basis of the findings. Any such statement must be submitted no later than five working days after the meeting with the HR representative in which the findings of the investigation is discussed.
- 51.5.9 Within ten days from the date HR meets with the complainant and respondent, the company will review the investigative report and any statements submitted by the complainant or respondent, discuss results of the investigation with HR and other management staff as may be appropriate and decide what action, if any, will be taken. The HR director will report the company's decision to the complainant, the respondent and the appropriate management assigned to the department in which the complainant and the respondent work. The company's decision will be in writing and will include finding of fact and a statement for or against disciplinary action. If disciplinary action is to be taken, the sanction will be stated.
- 51.5.10 During the complaint process, while the confidentiality of the information received, the privacy of the individuals involved, and the wishes of the complaining person regarding action by the office cannot be guaranteed in every instance, they will be protected to as great a degree as is legally possible. The expressed wishes of the complaining person for confidentiality will be considered in the context of the company's legal obligation to act upon the charge and the right of the charged

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party to obtain information. In most cases, however, confidentiality will be strictly maintained by the company and those involved in the investigation. In addition, any notes or documents written by or received by the person conducting the investigation will be kept confidential to the extent possible and according to any existing state or federal law.

- 51.5.11 Any person electing to utilize this complaint resolution procedure will be treated courteously, the problem handled swiftly and as confidentially as feasible in light of the need to take appropriate corrective action, and the registering of a complaint will in no way be used against the employee nor will it have an adverse impact on the individual's employment status. While reporting such incidents would be a difficult personal experience, allowing harassment activities to continue will most certainly lead to less desirable outcomes. Employees are strongly urged to utilize this procedure. Filing groundless and malicious complaints is an abuse of this policy and is prohibited.

51.6 SITE SECURITY/PHYSICAL ACCESS

- 51.6.1 It is the company's policy to control physical access to the facility and its assets as one method of reducing the potential of conflict with other persons outside of the workforce. It is in the best interest of every employee to follow all procedures listed here.
- 51.6.2 Employees who have signed and filed a restraining order, temporary or permanent, against an individual due to a potential act of violence, who would be in violation of the order by coming near them at work, must supply a copy of the signed order to their supervisor. The supervisor will provide copies to the safety department and human resources department.

51.7 BACKGROUND CHECKS

- 51.7.1 It is in the best interest of ZARNAS COMPANIES to screen all applicants for a history of violence, including convictions for criminal offenses. It is the company's policy to check the backgrounds of all job applicants for criminal record and evidence of violent acts of behavior in an objective and fair manner.

51.8 REPORTING AND INVESTIGATING

- 51.8.1 An employee who is the victim of violence, believes they have been threatened with violence or witnesses an act or threat of violence towards anyone else will take the following steps:
 - 51.8.1.1 If an emergency exists and the situation is of immediate danger, employees must contact local officials by dialing 9-1-1 and take available, appropriate emergency steps to protect themselves from immediate harm, such as leaving the area.
 - 51.8.1.2 If the situation is not one of immediate danger, employees will report the incident to their supervisor or safety director as soon as possible to complete an *Incident Report*.
- 51.8.2 In keeping with a zero tolerance of workplace violence, all reported incidents will be investigated. In the interest of a safe and productive workplace, an employee who engages in prohibited conduct will be subject to appropriate disciplinary action, as determined by the findings of a fair and impartial investigation. Such discipline may include warnings, reprimand, suspension or immediate termination. In addition, certain actions may cause the employee to be held legally liable under state and/or federal law.

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- 51.8.3 It is the responsibility of all employees to report incidents of theft, misuse or destruction of property to management. All incidents involving theft, destruction or misuse of company assets, resources and property and/or employees' personal belongings must be reported. Reports are to be made directly to the operations manager within 24 hours.
- 51.8.4 Acts of violence or threats will be investigated immediately in order to protect employees from danger, unnecessary anxiety concerning their welfare, and the loss of productivity. The employee's supervisor will cause to be initiated an investigation into potential violation of work rules/policies. The operations manager will refer the matter to local police for their review of potential violation of civil and/or criminal law, if necessary.
- 51.8.5 Procedures for investigating incidents of workplace violence include:
 - 51.8.5.1 Visiting the scene of an incident as soon as possible
 - 51.8.5.2 Interviewing injured and threatened employees and witnesses
 - 51.8.5.3 Examining the workplace for security risk factors associated with the incident, including any reports of inappropriate behavior by the perpetrator
 - 51.8.5.4 Determining the cause of the incident
 - 51.8.5.5 Taking mitigating action to prevent the incident from recurring - Recording the findings and mitigating actions taken
- 51.8.6 In appropriate circumstances, ZARNAS COMPANIES will inform the reporting individual of the investigation results. To the extent possible, ZARNAS COMPANIES will maintain the confidentiality of the reporting employee and the investigation but may need to disclose results in appropriate circumstances (ex. in order to protect individual safety).

51.9 DISCIPLINARY PROCEDURES

- 51.9.1 While workplace violence is unacceptable, a fair and impartial policy is in place to assure employees of fair and equitable treatment when accused or found in violation of this policy.
- 51.9.2 Episodes of workplace violence can only be eliminated if employees are willing and able to report threats, violent acts and other unsafe conditions. To encourage employees to come forward without the fear of retaliation, the company promises to promptly investigate all complaints of retaliation and impose appropriate disciplinary action, up to and including termination.
- 51.9.3 An employee who exhibits violent behavior may be subject to criminal prosecution and will be subject to disciplinary action up to and including dismissal. Violent threats or actions by a non-employee may result in criminal prosecution. ZARNAS COMPANIES will investigate all complaints filed and investigate any possible violation of this policy which we are made aware.

51.10 TRAINING

- 51.10.1 It is in the best interest of the company and its employees to be well-informed on the nature of and self-defense against, workplace violence. To that end, training is mandated under this policy.

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- 51.10.2 Many security measures have been presented, but without the dedication of employees, the effectiveness of our site security will be greatly diminished and some measures may not work at all. It is our goal to raise employee dedication to and involvement in our plan by providing security awareness training to employees.
- 51.10.3 The safety department will provide training and instruction on general workplace security practices for employees, including supervisors.
- 51.10.4 Training and instruction will be provided as follows:
 - 51.10.4.1 To all current employees when the policy is first implemented
 - 51.10.4.2 To all newly hired employees, supervisors or employees given new job assignments for which specific workplace security training for that job assignment has not previously been provided
 - 51.10.4.3 To affected employees whenever management is made aware of a new or previously unrecognized hazard
- 51.10.5 Workplace security training and instruction includes, but is not limited to, the following:
 - 51.10.5.1 Preventive measures to reduce the threat of workplace violence, including procedures for reporting workplace security hazards
 - 51.10.5.2 Methods to diffuse hostile or threatening situations
 - 51.10.5.3 Escape routes
 - 51.10.5.4 Explanation of this policy
- 51.10.6 Specific instructions will be provided to all employees regarding any workplace security hazards unique to their job assignment.

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MOLD ABATEMENT

52.1 PURPOSE

52.1.1 The purpose of this policy is to standardize operational procedures and provide guidance where no specific regulatory requirement exist. Not all aspects of this program will be applicable to every mold abatement project and in these cases, the procedures outlined in this program will vary with the project and/or specific regulatory agency requirements.

52.2 RESPONSIBILITIES

52.2.1 On all construction jobsites covered by these guidelines, ZARNAS COMPANIES will designate a competent person who has the qualifications and authority for ensuring worker safety and health as required by general safety and health provisions for construction 29 CFR 1926, which provide for a competent person, health and safety prevention programs and frequent and regular inspections of the jobsites, materials and equipment.

52.2.2 The designated competent person will make frequent and regular inspection of the jobsites, in order to perform the job duties.

52.2.3 ZARNAS COMPANIES will employ full time personnel who will have the designation of either project manager or onsite supervisor, depending upon the organizational structure. These individuals will be experienced in administration and supervision of abatement projects, including work practices, protective measures for building and personnel, disposal procedures, respiratory protection, etc.

52.2.4 Except as otherwise indicated, the foreman will normally have the same education and training in mold control operations as the project manager or the onsite supervisor, with only slightly less on the job experience. The foreman can also act as the competent person on the jobsite.

52.2.5 ZARNAS COMPANIES has designated an individual to be responsible for ensuring compliance with all applicable standards of those local, state and federal regulatory agencies having jurisdiction over an abatement project as well as the specific health and safety requirements of the corporate safety program.

52.2.6 While not necessarily assigned to each abatement project on a full time basis, the environmental project manager may conduct periodic audits and worker training at each site or designated area.

52.3 GENERAL

52.3.1 When required, ZARNAS COMPANIES will be responsible for obtaining all necessary licenses and permits pertaining to the removal and disposal of mold contaminated materials.

52.3.2 ZARNAS COMPANIES will make a site visit to verify all dimensions and become familiar with specific site conditions. Where access is not feasible, for safety or other reasons and understanding of the proposed scope will be indicated. ZARNAS COMPANIES will establish a detailed scope of work including start and stop locations, square footage and other tangible points of delineating the quantity of removal.

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- 52.3.3 All change orders or variances to the mold abatement procedures must be approved in writing by the owner.
- 52.3.4 Any request for variance must be approved in writing prior to beginning any phase for the work covered by the variance.
- 52.3.5 All subcontractors employed will be required to comply with each applicable provision of these guidelines.
- 52.3.6 Unless otherwise specified by the contract document, ZARNAS COMPANIES will obtain a waste disposal site in compliance with all applicable EPA, state or local regulations.
- 52.3.7 Unless otherwise specified by the contract document, ZARNAS COMPANIES will furnish all labor, materials, services and equipment necessary to carry out the abatement operations in accordance with OSHA standards, EPA guidelines and all applicable state or local government regulation governing the jobsite.
- 52.3.8 A fire and emergency action plan will be developed for use in connection with the mold abatement operation. Emergency procedures will have priority over the abatement operations. Refer to *Emergency Action Plan* policy in the corporate safety manual.
- 52.3.9 Except to the extent that more explicit or more stringent requirements are written directly into these guidelines, all applicable codes and regulations will have the same force and effect as if copied directly in these guidelines.
- 52.3.10 On most commercial mold projects, even without asbestos, the required EPA *Notification of Demolition and Renovation* form may still be applicable. Check the local, city and state requirements as they may apply.

52.4 WORK PLAN

- 52.4.1 ZARNAS COMPANIES will devise a site specific work plan of the procedures proposed for use in complying with the requirements/recommendations of the mold abatement operation, magnitude of which will be dependent upon the complexity of the removal project. Included will be the location and layout of the decontamination areas, the sequencing of the removal work, the interface of trades involved in the performance of work, methods to be used to assure the safety of employees, building occupants and visitors to the site, the disposal plan including the location of the disposal site and a detailed description of the methods to be employed to control contamination.
- 52.4.2 The work plan may be expanded to include the use of portable HEPA ventilation systems, closing out the building's HVAC system, the method of removal to prohibit visible emissions in the work area and the packaging of removed mold debris.
- 52.4.3 An effort must be made to address all specific environmental issues that may emerge as a result of starting and completing the mold abatement project. In addition, future environmental issues, which may be a consequence of the completed project, must also be anticipated.

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- 52.4.4 ZARNAS COMPANIES will prepare a site specific plan for any emergency, which may arise during the course of the project. However, nothing in these procedures will impede safe exiting or providing of adequate medical attention in the event of an emergency.
- 52.4.5 Many of these procedures are already included in ZARNAS COMPANIES' corporate safety program, which along with the other procedures and the telephone numbers and locations of emergency services, including but not limited to, fire, ambulance, doctor, hospital, police, etc., will be located at the jobsite for employee information.

52.5 PERSONAL PROTECTIVE EQUIPMENT

- 52.5.1 Except to the extent that more stringent requirements are written directly into the contract respiratory protection will have the same force and effect as if copied directly into the contract. Where there is a conflict in the requirements set forth in this program and the best practice guidelines, the more stringent requirements will be enforced.
- 52.5.2 The respiratory protection intended for use will vary dependent on the potential exposure. Typically either a half mask or full face respirator will be used in conjunction with P100/H EPA filters.
- 52.5.3 In addition to the respiratory protection, the Job Safety Analysis program will be used to identify what other PPE will be necessary. Examples include the following:
 - 52.5.3.1 Coveralls (disposable or reusable)
 - 52.5.3.2 Foot covers
 - 52.5.3.3 Rubber boots
 - 52.5.3.4 Hard hats
 - 52.5.3.5 Safety glasses and/or goggles
 - 52.5.3.6 Work gloves
- 52.5.4 ZARNAS COMPANIES will provide either new or used materials and equipment that is undamaged and in serviceable condition. Only equipment recognized as being suitable for the intended use and is in compliance with the appropriate standards and sections of the ZARNAS COMPANIES safety manual will be used. Examples of equipment to be used includes:
 - 52.5.4.1 Scaffolding
 - 52.5.4.2 Electrical service
 - 52.5.4.3 GFCI
 - 52.5.4.4 Lighting
 - 52.5.4.5 Fire extinguishers

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52.5.5 Workers entering the jobsite will be required to wear adequate clothing applicable to a construction jobsite. This includes appropriate footwear, trousers, shirts with sleeves and hard hats and any other designated personal protective equipment as dictated by the JSA.

52.5.6 All personnel entering the work area, in which there is a potential to exposure to bio aerosol contaminants or respiratory protection is required, must first meet the following criteria. They must meet all the applicable requirements of the company *Respiratory Protection* policy.

52.6 DECONTAMINATION

52.6.1 After they have met the above criteria, all personnel must enter the clean room and remove all street clothing.

52.6.2 A clean set of protective clothing must then be put on, leaving the head covering off. The worker must then don an approved respirator and conduct the necessary field checks to determine the face piece to face seal. The head covering is then secured over the top of the respirator straps. The individual should then leave the clean room and proceed through to the work area.

52.6.3 Before leaving the work area, all personnel are required to remove gross contamination and debris from their protective clothing and feet by either HEPA vacuum or wet wiping. The worker then removes all clothing and equipment with the exception of respiratory protection equipment. All tools and extra work clothing, such as cold weather coats and pants, work boots or shoes, etc. which are contaminated, must remain in the work area. All disposable protective clothing must be placed in an appropriately marked bag for disposal with other contaminated waste materials. All personnel are then required to use the following decontamination procedures when leaving the work area:

52.6.3.1 Still wearing respirator, proceed to the wash facility. At a minimum, workers must wash face and hands with soap and water prior to removal and cleaning of their respirator.

52.6.3.2 While still in the work area, the appropriately bagged contaminated waste materials will be properly sealed with a *goose neck* seal and then a HEPA vacuum will be used to remove the gross contamination from the bags.

52.7 NEGATIVE PRESSURE ENCLOSURE SYSTEM

52.7.1 The work area is the location where the bio aerosol remediation work occurs. It may be a portion of a room, a single room or several rooms. The work area is considered contaminated during the remediation work and must be isolated from the balance of the building. The enclosure, by which this contaminated area is isolated, is known as the temporary enclosure.

52.7.2 The work area will be completely isolated from the other parts of the building so as to prevent contaminated dust or debris from passing beyond the isolated area. Should the area beyond the work area become contaminated as a consequence of an accidental release, those areas must be cleaned in accordance with appropriate procedures.

52.7.3 Unless otherwise specified by the contract document, all uncontaminated movable furniture, equipment, etc., will be cleaned with a HEPA filtered vacuum cleaner and removed from the work area before commencing the remediation work. Those items that cannot be removed will be cleaned with a HEPA filtered vacuum cleaner or wet wiped and then covered with one or two layers

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- of poly sheeting, properly taped. This covered furniture or equipment will then be considered as outside the work area unless the poly covering or seal is breached.
- 52.7.4 Unless otherwise specified in the contract document, all heating, air condition, ventilating or return air system openings within the work area must be completely shut down and sealed off with poly and tape. Caution must be taken to check with the host employer to ensure that this sealing off to the HVAC system will not cause any undue problems.
 - 52.7.5 A critical barrier will be constructed which will ensure the work place is isolated and contained, by erecting impermeable barriers at all exits or openings, including doorways, duct chases, manholes, mechanical shafts, elevator shafts, floor openings, drains and the like, so that all possible exit or entrance routes are effectively barricaded and sealed.
 - 52.7.6 When not desirable to provide extensive work area preparation as a general measure, plastic sheeting will be used, but only where there is a specific need to protect particular items, areas or finishes from damage or temporary contamination.
 - 52.7.7 All tools, scaffolding, vacuums, air filtering units, etc. which are necessary for the abatement work, should be placed into the work area before it is completely isolated.
 - 52.7.8 The primary access to the work area will be regulated to authorized personnel only. All other means of access will be closed off and sealed, and warning signs will be displayed on the clean side of the closed access. No one will be allowed to enter the work area that does not have a direct need to do so. Persons entering the work area must follow all entry procedures, including the removal of street clothing, donning protective clothing, using the appropriate respiratory protective device and complying with requirement of the respiratory protection program.
 - 52.7.9 A sufficient number of appropriately worded warning signs to adequately notify all persons in the vicinity of the work area of the dangers involved. The signs will normally be posted directly onto the clean side of the work area isolation barrier and at each entrance to the work area.

52.8 NEGATIVE PRESSURE SYSTEM

- 52.8.1 The negative pressure system is a fully operational engineering control system, which exhausts only the minimum amount of air from the work area necessary to create a minimum continuous negative pressure of -0.02 to -0.4 inches of water within the enclosure with respect to the area outside the enclosure.
- 52.8.2 This is achieved by using an *air filtering device* (AFD), which is a self-contained filtering machine capable of producing air flow and using a HEPA filter to collect and retain the airborne particles.
- 52.8.3 The methodology used in the negative pressure system is to seal all potential air paths into the work area as tightly as possible and provide a filtered exhaust system which removes only enough air from the sealed, isolated work area to establish a lower pressure to offset any air leakage which occurs and provide additional engineering controls within work area to lower airborne contaminants.
- 52.8.4 Once the remediation operation has begun, and the negative pressure system has been activated, the negative pressure must be maintained continuously until completion of the work.

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- 52.8.5 After construction of the enclosure is completed, a ventilation system should be installed to create a negative pressure within the enclosure. Such ventilation systems must be equipped with HEPA filters to prevent the release of airborne contaminants to the environment outside the enclosure and should be operated 24 hours per day during the entire project until the final cleanup is completed. ACGIH guidelines recommend that a sufficient amount of air be exhausted to create a minimum pressure of -0.02 - -0.028 inches of water within the enclosure with respect to the area outside the enclosure. This should commence at the beginning of any work that could possibly disturb bio aerosol contaminants and continue until completion of the project.
- 52.8.6 The exact pressure differential required will vary from project to project, depending upon how difficult it may be to obtain an appropriate seal of the area and how much existing air movement that it may be competing with from other building sources. In other words, exactly how many air changes per hour should be specified for the project depends on the overall project design.
- 52.8.7 From a practical standpoint, this pressure differential should not be above the -0.06 inches of water column range since anything higher begins to float the plastic off of the walls and floor.
- 52.8.8 The ventilation system should exhaust the HEPA-filtered clean air outside the building in which the remediation is taking place. If access to the outside is not available, the ventilation system can exhaust the HEPA-filtered bio aerosol-free air to an area within the building that is as far away as possible from the enclosure.
- 52.8.9 Portable ventilation, identified as an AFD, is necessary to create a negative pressure system within the enclosure. The AFD is designed to capture and clean the air inside the enclosure before exhausting it to the outside of the enclosure. The AFD must be equipped with a series of filters which include: The first-stage or pre-filter, which is a low efficiency type filter for particles 100um and larger; the second-stage or intermediate filter, which is a medium efficiency of not less than 99.97%. AFDs are available from several manufacturers and range from 600 cubic feet per minute (CFM) to over 2000 CFM and are capable of filtering particles of 0.3 micron in size with an efficiency of 99.97 percent. The number and capacity of AFDs required to ventilate and enclosure depends on the size of the area to be ventilated.
- 52.8.10 To determine the number of AFDs required, ascertain the volume, in cubic feet, of work area by multiplying floor area by ceiling height. The total air circulation requirement for the work area will be determined by dividing the above volume by the number fifteen, which is 4 changes per hour.
- 52.8.10.1 $\text{Volume of work area (cu.ft)/15} = \text{air circulation requirement (CFM)}$
- 52.8.10.2 The number of AFDs needed to achieve this rate will then be determined by dividing the air circulation requirement (CFM) by the working capacity of the AFD used.
- 52.8.10.3 $\text{Air circulation requirement/Capacity of AFD with loaded filters} = \text{number of AFDs needed}$
- 52.8.11 Normally, one additional AFD is added as a backup in case of equipment failure or if a machine needs to be shut down for filter changing.
- 52.8.12 Locate the AFD so that makeup air enters and traverses the work area as much as possible. This may be accomplished by positioning the HEPA filtered AFD at a maximum distance from the worker access opening or other makeup air sources.

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52.8.13 Additional AFD machines could be located free standing inside the work area to circulate air within the area in order to filter and trap contamination out of the air. Depending on work methods, other engineering controls and previous treatment, the number of machines may be varied as little or as much as needed to lower the airborne contaminant levels in the work area.

52.8.14 Care should be taken to avoid having the exhaust opening of the AFD directed at the plastic walls of the containment area or at any of the sealed openings.

52.8.15 Air movement from the AFD should be directed away from workers performing remediation work within the enclosure and toward a HEPA filtration or collection device exhausting out of work area.

52.8.15.1 AFD should, whenever possible, be exhausted outside the building.

52.8.16 Under certain conditions, other hazards must be give consideration (ex. high work area temperatures, gaseous or organic contaminants) may dictate a need to increase exhaust air. These hazards must be considered and balanced. If the other contaminants cannot be eliminated or filtered or if cooling devices are not available to reduce temperatures, then additional air exhausting may be necessary. In these cases, exhaust may be increased or machine positioning may be changed until the other contamination levels, temperature, etc., are reduced to acceptable levels.

52.8.17 This must be done with extreme care, however, since each unit of additional exhaust to the outside increases the risk of contamination release in the event of an accident or component failure. If air inlets are provided to introduce make-up air, they must be monitored, provided with fixed doors, which are closed when not in use, or equipped with HEPA filters to prevent contamination escape.

52.8.18 Upon completion of the project, the AFD may be turned off and removed from the work area.

52.8.19 Before removal from the work area, the pre-filter of the AFD should be removed and properly disposed of as contaminated waste and the intake opening of the machine should be sealed with 6 mil poly to prevent environmental contamination from the balance of the filters.

52.9 PRESSURE DIFFERENTIAL MONITORING

52.9.1 An inclined manometer or differential pressure gauge, capable of 0-3' wg for measuring the negative pressure within the enclosure, must be installed at a representative location on the negative pressure enclosure on each project and must be monitored frequently throughout all work shifts during which remediation takes place.

52.9.2 It will be the responsibility of the project competent person to ensure that manometer readings are taken at the beginning of and at least twice during, each shift and that these reading are accurately documented in an appropriate log or the supervisor's daily journal.

52.10 CONTROLS

52.10.1 ZARNAS COMPANIES will use the following engineering controls and work practices in all operations covered by this section.

52.10.2 HEPA filtered equipped vacuum cleaners will be used to collect dust and small particulates.

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52.10.3 Wet wiping will be used to prevent dispersal of contaminants during cleaning and to control employee exposures.

52.10.4 Prompt cleanup: Prompt clean-up (not allowing accumulation) and disposal of wastes and debris contaminated with microbial agents in to leak tight containers.

52.10.5 In addition to the above the following control methods will be followed:

52.10.5.1 Local exhaust ventilation equipped with HEPA filter dust collection systems;

52.10.5.2 Enclosure or isolation of processes producing contaminated dust;

52.10.5.3 Ventilation of regulated area to move contaminated air away from breathing zone of the employees and toward a filtration or collection device equipped with a HEPA filter

52.10.5.4 Use of biocides and anti-microbial agents, as dictated by particular project and contaminants.

52.11 CLEANUP PROCEDURES

52.11.1 This section details the cleaning and decontamination procedures to be followed during the final cleanup of the work area, including the decontamination of the air in the work area which has been contaminated by the elevated airborne contaminants generated during the remediation activities.

52.11.2 It includes the cleaning and decontamination of all surfaces (ceiling, walls, floors) of the work area and all furniture and equipment in the work area. In order to accomplish this, the cleaning and decontamination process will be conducted in a series of cleanings. These cleanings apply to that portion of the project in which all visible debris and contaminated material has been removed from the work area. During this entire cleaning process, the air filtering units must be maintained in continuous operation.

52.11.3 After the removal of all visibly contaminated material and materials presumed to be reservoirs for microbial growth, as stipulated in the contract documents, all surfaces in the work area should be thoroughly cleaned with HEPA filtered vacuums and wet wiped. The decontamination units must also continue to remain in operation.

52.11.4 At the time of this cleaning, all tools and equipment remaining in the work area should be decontaminated by HEPA by vacuuming and/or wet wiping and then removed from the area. When this cleaning has been completed, a visual inspection should be conducted of the work area to ensure that all areas are free of visible contamination. With the air filtering units remaining in operation, all of the remaining poly should be stripped from the work area, leaving only the critical barrier intact.

52.11.5 Once this is completed, the area is now ready to be visually inspected by the host employer or owner.

52.11.6 If the results of the inspection are satisfactory, the individual conducting the inspection should conduct surface and air sampling as required by the contract documents. The acceptable levels of

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microbial agents to remain in the building after cleaning should be established prior to the start of the project, and be contained in the contract documents.

52.11.7 Depending on the contract documents, the company will begin dismantling operations of the remaining work area and critical barriers, upon receipt of acceptable analytical results. However, in some instances, contract documents will provide for the company to dismantle operations prior to receipt of laboratory results, upon approval by the host employer of the final cleaning. Regardless, all debris from the removal of these areas will be packaged in disposal bags or wrapped and sealed in poly for disposal as contaminated waste

52.12 DEMOBILIZATION

52.12.1 The air filtering units should be turned off, sealed in poly and transported to the next project or office. All debris, used cleaning materials, unsalvageable materials used for the enclosures, and any other remaining materials should be disposed of as contaminated waste.

52.13 EMERGENCY PROCEDURES

52.13.1 Emergency procedures must be developed prior to the initiation of remediation activities. The emergency procedures must be in written form and prominently posted in the site office and the employees' eating area. Copies must also be posted in the clean change room and the dirty equipment room of the worker decontamination unit. Prior to entering the containment for the first time, everyone must read and sign these procedures to acknowledge receipt and understanding of the jobsite layout, location of emergency exits, emergency routes to follow and the emergency procedures.

52.13.2 Emergency procedures must include considerations of fire, explosion, toxic atmospheres, electrical incidents, slips, trips and falls, confined spaces and heat related injuries. Procedures must be written, emergency exits noted and marked, emergency evacuation routes mapped out, emergency and evacuation annunciation systems identified, emergency phone numbers listed and any other critical information, such as barriers that may affect response capabilities, must be included.

52.13.3 Once these procedures have been posted, employees must be trained in these procedures.

52.13.3.1 For non-life threatening situations: Employees injured or otherwise incapacitated must decontaminate following normal procedures, with assistance from fellow workers if necessary, before exiting the work area to obtain proper medical treatment.

52.13.3.2 For life-threatening injury or illness: Measures to stabilize the injured worker, remove him/her from the work area and secure proper medical treatment will take priority over worker decontamination. Personal protective equipment should be available for response team members needing to enter the containment.

52.14 TRAINING

52.14.1 The company will provide training for all employees who perform abatement operations at no cost to the employee and ensure their participation in training. Training will be provided prior to or at the time of initial assignment.

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- 52.14.2 The training program will be conducted in a manner that the employee is able to understand. Each employee will be informed of the following:
 - 52.14.2.1 Methods of recognizing microbial agents
 - 52.14.2.2 Health effects associated with fungal and bacterial exposure
 - 52.14.2.3 Nature of operations that could result in exposure to microbial agents, the importance of necessary protective controls to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures and waste disposal procedures and any necessary site specific instruction in the use of these controls and procedures.
 - 52.14.2.4 Purpose, proper use, fitting instructions and limitations of respirators as required by OSHA and the company *Respiratory Protection* policy
 - 52.14.2.5 Appropriate work practices for performing the mold remediation project
 - 52.14.2.6 The requirements dictated by the company hazard communication program.
- 52.14.3 The company will make readily available to all affected employees without cost, written materials relating to the training.

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PAINTING SAFETY

53.1 PURPOSE

53.1.1 The purpose of this policy is to ensure the safety of ZARNAS COMPANIES employees when painting. This program establishes the minimum requirements for painting safety. The safety director is responsible for administering this program and making sure all procedures are appropriately followed.

53.2 POTENTIAL HAZARDS

53.2.1 Electrostatic charge resulting in electric shocks and sparks

53.2.2 Airborne mist and particles affecting the eyes, respiratory track and skin

53.2.3 Noise

53.2.4 Production of hazardous dusts

53.2.5 High air and paint pressure is an unseen hazard for all personnel working around paint pumps. High pressure can also create injection injuries to personnel.

53.2.6 Condition of all rigging equipment will be checked prior to each use.

53.2.7 All air hose connections must be secured by the use of cotter pins or clips through the coupling and have whip checks or excess flow valves installed at compressor outlet and all bull hose connections.

53.2.8 Adequate lighting

53.2.9 Only painting units that contain essential parts are to be available for use. Any unit that has any missing part or has visible damage will be removed from service and repaired before being used.

53.2.10 Air compressors will be placed in an area free from contamination. The air intake system will not be located near equipment exhaust, paint or other toxic fumes.

53.2.11 Heat related illness

53.2.12 Absorption through bare skin or skin that is punctured, cut or abraded.

53.2.13 Sprays, aerosols, mists and vapors may be a health hazard. These products contain various materials that can enter the body through inhalation, ingestion, absorption or injection.

53.2.14 Solvents present a toxicity hazard. Excessive breathing of solvent vapors may cause dizziness, nausea, irritation of the mucous membranes and possibly allergic reactions of the skin.

53.3 GENERAL

53.3.1 Signs will be posted in areas of operations that may constitute a fire hazard, such as gasoline or solvent handling areas. Smoking and ignition sources (engines, power equipment, etc.) will not be permitted within 50 feet of painting operations.

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- 53.3.2 No more than 25 gallons of flammable or combustible liquids are to be stored in office, change or equipment sheds or trailers without the use of approved storage cabinets. Storage in excess of 25 gallons should be in separate shanty or trailers not used for anything except storage.
- 53.3.3 Any rags and cleanup waste materials must be properly stored in designated waste containers. These items must be stored in covered waste containers until removed from the jobsite.
- 53.3.4 Outside storage of paints, thinners, gasoline, etc. In containers not exceeding 60 gallons each will be placed in piles or areas not exceeding 1,100 gallons. All storage areas will be at least 20 feet from any building or combustible structure.
- 53.3.5 When containers of solvents, paints or thinners are stored outside, a minimum of one 20-B rated extinguisher or equivalent will be provided and located between 25-75 feet of the storage area.
- 53.3.6 During the transfer of solvents from bulk storage containers, proper bonding techniques must be used during the transfer.
- 53.3.7 Use extreme caution when cleaning or changing spray tips. If the spray tip clogs while spraying, engage the gun safety latch immediately. Always follow the pressure relief procedure, below, and then remove the spray tip to clean it.
- 53.3.8 Never wipe off build-up around the spray tip until pressure is fully relieved and the gun safety latch is engaged.
- 53.3.9 To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin or injury from moving parts, always follow procedures whenever shutting off spray equipment, checking or servicing any part of the spray system, installing, cleaning or servicing any part of the spray system, installing, cleaning or changing spray tips and whenever stopping spraying operations.
 - 53.3.9.1 Engage the gun safety latch.
 - 53.3.9.2 Shut off the power supply to the pump and close any bleed type master air valves in the air supply.
 - 53.3.9.3 Disengage the gun safety latch.
 - 53.3.9.4 Hold a metal part of the gun firmly to the side of a grounded metal pail and trigger the gun into the pail to relieve pressure.
 - 53.3.9.5 Engage the gun safety latch.
 - 53.3.9.6 Open the pump fluid drain valve, having a container ready to catch the drainage.
 - 53.3.9.7 Leave the drain valve open until you are ready to spray again.
- 53.3.10 If suspected that spray tip or hose is completely clogged or pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually.
- 53.3.11 In the event of injection injury seek medical attention immediately.

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53.4 AIRLESS PAINT EQUIPMENT

- 53.4.1 All airless spray guns will be equipped with certain safe guards to prevent injection injuries.
- 53.4.2 Airless spray guns of the type which atomize paints and fluids at high pressure (1000 pounds or more per square inch) will be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger.
- 53.4.3 An inspection of these devices is required.
- 53.4.4 Never treat an injection injury as a simple cut. Tell healthcare provider exactly what was injected and give them a copy of the SDS. For treatment instructions have the doctor call the National Poison Center Network at (800) 222-1222.
- 53.4.5 Paint manufacturers provide detailed information regarding the components of the paint and critical information for the treating physician. This information should be kept on site at all times and readily available during painting activities.
- 53.4.6 Do not point the gun at yourself or anyone else.
- 53.4.7 Do not put fingers or hands over the spray tip. Never change a spray tip when the gun is pressurized.
- 53.4.8 Always keep the tip guard in place.
- 53.4.9 Inspect and unlock the trigger safety before spraying.
- 53.4.10 Inspect all connections before the system is under pressure. Make sure there are no leaks or damage to hoses.
- 53.4.11 Replace all damaged hoses.
- 53.4.12 If a gun is not working properly repair it or have it repaired.
- 53.4.13 Never leave a pressurized system unattended.
- 53.4.14 Do not remove spring guards from airless hoses.
- 53.4.15 Keep airless lines away from heat source.
- 53.4.16 Do not drag airless lines over sharp or rough objects.
- 53.4.17 If a line breaks, shut down the equipment and bleed the system.
- 53.4.18 Never permit anyone to modify the equipment.
- 53.4.19 All paint pumps and spray equipment will be properly bonded and grounded prior to its use.
- 53.4.20 Before removing any part of the spray gun for cleaning or servicing, disconnect the power source and carefully relieve the fluid pressure.
- 53.4.21 Due to static electricity all equipment and objects being sprayed must be properly grounded.

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53.4.22 Check the ground continuity in the hose and equipment at least once a week.

53.4.23 When flushing equipment, remove the spray tip, use the lowest possible pressure and maintain firm metal contact between the spray gun and metal waste drum with the use of a ground.

53.4.24 Position paint hoses in long radius curves around corners and sharp obstacles.

53.5 INSIDE TANKS OR ENCLOSED STRUCTURES

53.5.1 A verbal or visual means of communication will be established between the painters and the authorized personnel outside.

53.5.2 Follow the proper confined space procedures to determine if the enclosure is a permit required confined space.

53.5.3 In the event of an emergency, the attendant will shut down the paint pumps.

53.5.4 When painting inside a vessel, tank or structure, only authorized personnel will be allowed inside.

53.5.5 Checks for oxygen deficiency and explosive hazards will be made before starting work and at least every 2 hours thereafter while painting.

53.6 PERSONAL PROTECTIVE EQUIPMENT

53.6.1 Whenever a paint crew first set up on a jobsite, workers involved in the painting operation must become familiar with all products that will be used. The SDS for products being used are to be reviewed and the proper PPE is to be available on the jobsite and properly used during all mixing and cleaning activities.

53.6.2 Heavyweight long sleeved shirts

53.6.3 During mixing and cleaning operations, proper gloves must be worn to prevent the materials from coming in contact with the hands. The use of eye protection in the form of safety glasses and chemical mono goggles or face shield is required to avoid any splashing hazards. Use only low speed mechanical mixers whenever possible. Protective skin creams can be used to protect the worker and aid in personal clean up.

53.6.4 Safety glasses

53.6.5 Hard hats

53.6.6 Hearing protection

53.6.7 Proper footwear

53.6.8 In order to properly ascertain the respiratory requirements for painting operations, review the SDS for the paint being used.

53.6.9 All equipment used to supply breathing air to painters, including air compressors, will conform to the regulations below.

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- 53.6.10 Air supplied by a compressor that is used as breathing air must conform to the Compressed Gas Association (CGA) specifications G-7.1 for grade D air. The CGA imposes the following limitations on grade D air:
- 53.6.10.1 Oxygen content from 19.5% - 23.5%
 - 53.6.10.2 Carbon dioxide less than 1,000 parts per million
 - 53.6.10.3 Carbon monoxide less than 100 parts per million
 - 53.6.10.4 Oil vapor: 5mg per cubic meter
 - 53.6.10.5 Lack of noticeable odor
- 53.6.11 ZARNAS COMPANIES will ensure that compressed oxygen is not used in atmosphere supplying respirators that have previously used compressed air.
- 53.6.12 The water vapor present in the air must not be so great as to cause condensation in the air lines with subsequent delivery of liquid water into the blasting hood.
- 53.6.13 For compressors that are not oil-lubricated, ZARNAS COMPANIES will ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.
- 53.6.14 For air supplied by oil lubricated compressors either a high temperature or carbon monoxide alarm, will be used to monitor the carbon monoxide levels. If only high temperature alarms are used, the air supply will be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm. Carbon monoxide monitoring may be performed utilizing a compact CO gas alert clip monitor or a continuous, in line monitor may be utilized.
- 53.6.14.1 The gas alert clip monitor is a compact disposable CO gas meter with both audio and visual alarms. The alarm fits in an abrasive blaster supplied fresh air hood on the inside lapel area under the blast apron. This monitor provides the blaster with an in-hood warning if an unacceptable level of CO is detected. Each worker will be equipped with their own gas alert clip.
- 53.6.15 Filters used for purifying breathing air are to be serviced regularly.
- 53.6.16 Filters used to remove water vapor, oil mist, and particulate from breathing air are to be serviced at intervals not to exceed six months or manufacturer recommendations.
- 53.6.17 Records of servicing of filters for breathing air will be recorded and maintained on file.
- 53.6.18 All filters should be placed in line after an after cooler if the compressor used does not have a built in after cooler.
- 53.6.19 Before commencing a painting operation, an assessment must be undertaken that determines likely health effects from the blasting process and associated materials. Appropriate respiratory protection equipment must be specified for the employees performing the work.

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53.6.20 Before commencing a painting operation, assess the likely health effects and specify the appropriate respiratory protection equipment for the employees performing the work.

53.6.21 Any and all respiratory equipment used during painting operations must be properly approved for the application. NIOSH has specific requirements that this type of equipment must meet.

53.7 FALL PROTECTION

53.7.1 Proper fall protection must be provided when painting.

53.7.2 Proper ladders, scaffolds, and rigging equipment are essential to all painting operations.

53.7.3 For more information on fall protection, refer to company *Fall Protection* policy.

53.8 VENTILATION

53.8.1 Proper ventilation is of great importance during paint mixing and cleaning operations. Because of the flammable and toxic nature of the materials used, proper ventilation is the best way to control these hazards.

53.8.2 Ventilation equipment must be non-sparking fans and be bonded to tank during use. Ventilation fans must be sized correctly for the volume of the tank/vessel interior and the evaporation rate of the paint system. Explosion proof equipment must be used in flammable atmosphere.

53.8.3 Adequate ventilation must be assured before any painting operations are started.

53.8.4 If painting interior of structure, sufficient ventilation must be provided to keep solvent vapors from exceeding 10% of the lower explosive limit (LEL). In order to remove heavier solvent vapors, ventilation fans will be placed at the bottom of the vessel and the air blown out of the vessel.

53.9 LIGHTING

53.9.1 Proper lighting levels will be maintained during painting operations to allow safe access and egress and travel within the tank, vessel or enclosed structure.

53.9.2 Lighting used during painting operations will be protected by GFCI or similar means.

53.9.3 Lighting used during painting operations inside of tanks, vessels or enclosed structures will be on multiple circuits to prevent all lights from turning off if a single breaker trips.

53.9.4 Inspection of lights and electrical cords will be conducted prior to starting painting operations to ensure there are no exposed conductors with the potential to short and cause an electrical spark.

53.9.5 If LEL levels exceed 10% inside of an enclosed vessel, structure or tank during painting operations all personnel will exit and lights will be turned off until the LEL levels can be brought below 10%.

53.10 INSPECTIONS

53.10.1 Every component of a painting system will be checked and its proper function verified before being put into service.

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- 53.10.2 Airless spray equipment is to be inspected on a daily basis for proper function. All safety devices and tip guards are to be in place and operated properly.
- 53.10.3 Inspect all rigging equipment, ladders and scaffolds prior to their use each and every shift prior to starting work. Carefully examine all parts of each component to ensure that all potential hazards are eliminated. Check the condition of all ropes and cables being used.
- 53.10.4 Inspect all angles and bars that have been installed by the erection crew and ensure that all butt splices have been aligned vertically on the painter's ring and have been properly welded together and to the structure.

53.11 TRAINING

- 53.11.1 Only trained and competent employees are to be allowed to operate paint equipment.
- 53.11.2 All painters and those assisting the operator should receive training that includes the following:
 - 53.11.2.1 Information about the potential adverse health effects of toxic exposure.
 - 53.11.2.2 SDS for all materials used.
 - 53.11.2.3 Information about safe handling, labeling, and storage of toxic materials.
 - 53.11.2.4 Discussion about the importance of engineering controls, personal hygiene, and work practices in reducing toxic exposure.
 - 53.11.2.5 Instructions about the use and care of appropriate protective equipment (including protective clothing and respiratory protection).
 - 53.11.2.6 Instruction on proper use of all airless paint equipment and necessary safeguards.



CADMIUM AWARENESS

54.1 PURPOSE

54.1.1 The purpose of this policy is to provide guidelines for safely working with cadmium. It includes provisions for training, PPE guidelines, monitoring, medical surveillance, housekeeping and general safety related work practices.

54.2 RESPONSIBILITIES

54.2.1 Safety department

54.2.1.1 Ensuring that ANSI approved PPE and supplies are available to protect employees from cadmium exposure.

54.2.1.2 Coordinate the required training for affected employees. Designate a competent person for those work activities affected by this safety policy and procedure.

54.2.1.3 Provide training, expertise and guidance to qualified persons to perform cadmium exposure assessments.

54.2.1.4 Make the written cadmium policy available to employees, OSHA and NIOSH representatives.

54.2.1.5 Maintain all medical records for the specific time periods outlined in this policy.

54.2.2 Supervisors

54.2.2.1 Ensure that no cadmium related operation is performed without the appropriate controls being in place as prescribed in this safety policy and procedure.

54.2.2.2 Assist competent and qualified persons as requested.

54.2.3 Competent person

54.2.3.1 Responsible for identifying existing and potential cadmium hazards in the workplace.

54.2.3.2 Responsible for and have complete authority to, take prompt corrective measures to eliminate or control cadmium hazards.

54.2.3.3 Determine, prior to beginning a job, whether cadmium is present in the workplace.

54.2.3.4 Establish regulated areas and ensure that access to and from those areas is limited to authorized employees.

54.2.3.5 Ensure adequacy of any employee exposure monitoring required by the standard.

54.2.3.6 Ensure that all employees exposed to airborne cadmium levels above the PEL wear appropriate PPE and trained to use appropriate methods to control cadmium exposure.

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54.2.3.7 Ensure that proper hygiene facilities are provided and that workers are trained to use these facilities.

54.2.3.8 Ensure that required engineering controls are implemented, maintained in proper operating condition and function properly.

54.2.4 Qualified person

54.2.4.1 Responsible for conducting cadmium exposure assessments in accordance with this safety policy and procedure and established exposure assessment protocols.

54.2.5 Employee

54.2.5.1 Comply with all applicable guidelines contained in this safety policy and procedure.

54.2.5.2 Report unsafe acts associated with this safety policy and procedure to their supervisor.

54.2.5.3 Maintain PPE in good working order at all times and have them replaced when they become worn or unsafe.

54.2.5.4 Personnel employed by ZARNAS COMPANIES and all contractors and subcontractors working at any and all construction sites operated by ZARNAS COMPANIES are required to comply with the procedures and work practices outlined in this cadmium policy.

54.3 MONITORING

54.3.1 If cadmium may be present in any operation, then an initial exposure assessment must be made to determine whether an employee's exposure exceeds the action level.

54.3.2 Cadmium may be present if:

54.3.2.1 Any information, observations or calculation that would indicate employee exposure to cadmium (ex. SDSs, past reports, relevant plans)

54.3.2.2 Any previous measurements of airborne cadmium

54.3.2.3 Any employee complaints or symptoms that may be attributable to cadmium exposure

54.3.3 The initial assessment will document the exposure an employee would have without the use of a respirator.

54.3.4 If ZARNAS COMPANIES can reduce the airborne concentration of cadmium in the air and two consecutive measurements collected seven days apart confirm cadmium exposures are below the action level, monitoring can be discontinued for each employee whose exposure is represented by this monitoring. Employee exposures below the action level require no further monitoring.

54.3.5 ZARNAS COMPANIES will conduct additional monitoring wherever there has been a change in raw materials, personnel, equipment, work practices or finished products that may result in an employee being exposed to cadmium above the PEL.

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- 54.3.6 Each employee monitored will be notified of results within 15 working days after receipt of results.
- 54.3.7 Employees or their designated representatives may observe cadmium monitoring procedures at the worksite. Employees or their designated representatives who observe the cadmium air monitoring are entitled to an explanation of the measurement procedure and to record the results that are obtained. Employee or their designated representatives must be provided with appropriate PPE during the cadmium monitoring.

54.4 EXPOSURE

- 54.4.1 ZARNAS COMPANIES worksite operations that may include cadmium exposure include, but is not limited to:
 - 54.4.1.1 Cutting, brazing, grinding or welding on surfaces that are painted with cadmium-containing paints
 - 54.4.1.2 Cadmium is found in some industrial paints and may represent a hazard when spray applied
 - 54.4.1.3 Transporting, storing and disposing of cadmium or cadmium containing materials
 - 54.4.1.4 Cutting, brazing, grinding or welding on surfaces that are painted with cadmium-containing paints. At the high temperatures reached in these operations, metals often form metal fumes, which have different health effects and exposure standards than the original metal or metal compound and require specialized controls.
- 54.4.2 ZARNAS COMPANIES will assure that no employee is exposed to an airborne concentration of cadmium in excess of five micrograms per cubic meter of air (5 ug/m^3), calculated as an eight hour time weighted average exposure (TWA).
- 54.4.3 Where the PEL is exceeded, a written compliance program will be implemented to reduce employee exposure to or below the PEL by means of engineering and work practice controls.

54.5 CONTROLS AND SAFE WORK PRACTICES

- 54.5.1 Use of HEPA filtered exhaust systems at the source of the fumes or, if this is not feasible, within the general work area.
- 54.5.2 Materials containing cadmium will not be applied by spray methods, if exposures are above the PEL, unless employees are protected with certain specified respirators and measures are taken to limit overspray and prevent contamination of adjacent areas.
- 54.5.3 All surfaces will be maintained as free as practicable of accumulated cadmium.
- 54.5.4 Floors and other surfaces where cadmium accumulates may not be cleaned by the use of compressed air. High efficient particulate air (HEPA) or other equally effective filtration system should be considered for use in cleaning contaminated surfaces.
- 54.5.5 Shoveling, dry or wet sweeping and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective.

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- 54.5.6 Use of exhausted power tools with HEPA filters.
- 54.5.7 Where vacuuming methods are selected, the vacuums will be used and emptied in a manner which minimizes the re-entry of cadmium into the workplace.
- 54.5.8 Employees are responsible for washing hands and face prior to breaks and lunch.
- 54.5.9 Lunch areas will be maintained free of cadmium so that no employee in the lunch area is exposed at any time to cadmium. Employees are required to wash their hands and face prior to eating, drinking, smoking, chewing tobacco or gum or applying cosmetics. Employees will not enter the lunchroom facilities with protective work clothing unless surface lead dust has been removed by HEPA vacuuming or some other method that removes cadmium dust without dispersing it.
- 54.5.10 Establishment of a regulated area that will keep unprotected employees out and prevent the spread of cadmium dust beyond the boundaries of the area. For work inside buildings, this will involve erection of critical barriers over ventilation system vents, doors, open areas and other possible points of penetration. Further, it may be necessary to arrange the ventilation system to place the work area under negative pressure relative to the surrounding areas.
- 54.5.11 ZARNAS COMPANIES has established regulated areas where employee exposures to cadmium exceeds the PEL. Access to these areas is restricted to authorized personnel only. Smoking, eating, drinking, chewing tobacco or gum or applying cosmetics are prohibited in the regulated areas.
- 54.5.12 Each employee will be required to wear appropriate PPE and respiratory protection required to enter the regulated area.
- 54.5.13 Signs are posted in the regulated area as well as the approaches to the regulated area. The signs are illuminated and cleaned so they are readily visible.

DANGER – CADMIUM - CANCER HAZARD
CAN CAUSE LUNG AND KIDNEY DISEASE
RESPIRATORS REQUIRED
AUTHORIZED PERSONNEL ONLY

54.6 PERSONAL PROTECTIVE EQUIPMENT

- 54.6.1 ZARNAS COMPANIES provides PPE to each employee exposed to cadmium above the PEL. ZARNAS COMPANIES provides PPE when skin or eye irritation is associated with cadmium exposure at any level.
- 54.6.2 Employees will not remove cadmium from protective clothing or equipment by blowing, shaking or any other means that disperses cadmium into the air.
- 54.6.3 Employees will use change rooms and separate storage facilities for protective work clothing and equipment and for street clothes to prevent cross contamination.
- 54.6.4 Employees will not be allowed to remove contaminated clothing from the facility. Contaminated protective clothing will be placed in marked containers. Containers will be closed immediately.

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54.7 RESPIRATORY PROTECTION

- 54.7.1 Respirators must be used when the concentration of cadmium is at or above the PEL after engineering and work practice controls have not been sufficient to reduce exposures.
- 54.7.2 Respirators will be selected by the safety director in conformance with this policy. Fit testing for respirators must be conducted within 6 months prior to any cadmium related work.
- 54.7.3 Where the potential exists for exposure over the action level, employees will use a MSHA/NIOSH approved supplied air respirator with a full face piece operated in a pressure demand or other positive pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure demand or other positive pressure mode.
- 54.7.4 If requested by the employee, a powered air purifying respirator must be provided in lieu of a negative pressure respirator.
- 54.7.5 Respirators, like all PPE are provided at no cost to the employee.

54.8 EMERGENCY PLAN

- 54.8.1 If cadmium comes in contact with eyes, immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids. Seek medical attention immediately.
- 54.8.2 If cadmium comes in contact with skin, remove contaminated clothing. Wash contaminated skin with soap and water.
- 54.8.3 Persons not wearing respiratory protection and PPE will be restricted from areas of releases until all cleanup has been completed.
- 54.8.4 If potentially hazardous amounts of cadmium fume are inadvertently released, ventilate the area of the release to disperse the fume.
- 54.8.5 If cadmium dust is released in hazardous concentrations, the following steps should be taken:
 - 54.8.5.1 Remove all ignition sources.
 - 54.8.5.2 Ventilate area of release.
 - 54.8.5.3 Collect released material in the most convenient and safe manner for reclamation or for disposal in sealed containers in a secured sanitary landfill.
- 54.8.6 Cadmium dust may be disposed of in sealed containers in a secured sanitary landfill.

54.9 MEDICAL SURVEILLANCE

- 54.9.1 ZARNAS COMPANIES has implemented a medical surveillance program for all employees exposed or may be exposed to cadmium above the OSHA AL for more than 30 days per year. The medical surveillance program examinations will be performed under the supervision of a licensed physician. Medical surveillance is available for each affected employee and is provided at no cost to the employee and at a reasonable time and place. The medical surveillance program also

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includes biological monitoring. Medical examinations are made available at least annually and more often if required. The medical examinations and biological monitoring requirements for pre-employment, surveillance and medical removal as outlined in the medical surveillance section of the cadmium standard are the minimal examination criteria to be followed by the licensed physician performing the medical surveillance.

54.9.2 ZARNAS COMPANIES provides an examination for those employees assigned to an area where a respirator is required. The examination is performed by the licensed physician. The examining physician will determine if employee can wear a respirator.

54.9.2.1 If the employee cannot wear a respirator, the employee will be assigned to an area where cadmium exposures are below the OSHA PEL.

54.9.3 The company y will also provide examinations to those employees acutely exposed to cadmium during an emergency procedure and at the time of termination.

54.9.4 The following information will be provided to the physician:

54.9.4.1 A copy of the policy

54.9.4.2 Description of affected employees former, current and anticipated duties as relate to occupational exposure to cadmium

54.9.4.3 Employees former, current and anticipated future levels of occupational exposure to cadmium

54.9.4.4 Description of PPE and respiratory protection used and how long used or anticipated to be used by employee

54.9.4.5 Results of previous biological monitoring and medical examinations

54.9.5 The physician will provide a written medical opinion for each medical examination performed on each employee. The medical opinion will contain the following information:

54.9.5.1 Physician's diagnosis for employee

54.9.5.2 Physician's opinion of any detected medical condition(s) that would place employee at increased risks of impairment to health from further exposure to cadmium including any indications of potential cadmium toxicity

54.9.5.3 Results of biological, other testing or related evaluations that directly assess employee's absorption of cadmium

54.9.5.3.1 The physician has been instructed to not reveal specific findings or diagnoses unrelated to cadmium exposure

54.9.5.4 Any recommended removal from, or limitation of activities or duties of employee or restriction on use of personal protective equipment

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- 54.9.5.5 A statement that physician has clearly and carefully explained results of medical evaluation including biological monitoring and medical conditions related to cadmium exposure to the employee

54.10 RECORDKEEPING

- 54.10.1 ZARNAS COMPANIES maintains records of exposure monitoring, medical surveillance and training.
- 54.10.2 Medical surveillance information on each employee will be maintained on file for the duration of employment plus 30 years.
- 54.10.3 Employees can request a copy of their medical records. These records will be provided to the employee within 15 days of the request.
- 54.10.4 This written program will be reviewed and updated annually (or more often to reflect significant changes in employer's compliance status).

54.11 TRAINING

- 54.11.1 ZARNAS COMPANIES will provide training for all employees who are potentially exposed to cadmium, assure employee participation and maintain a records of this training.
- 54.11.2 Employees will be trained prior to their initial job or reassignment. Refresher training will be provided annually.
- 54.11.3 All levels of employees with potential job related cadmium exposure and competent persons must be trained in:
 - 54.11.3.1 Cadmium hazards and health effects
 - 54.11.3.2 Sources of cadmium exposure
 - 54.11.3.3 Acceptable work practices to reduce exposure and PPE
 - 54.11.3.4 Cadmium spill response and disposal
 - 54.11.3.5 Medical surveillance
 - 54.11.3.6 Employee rights under this policy and the OSHA construction standard on cadmium
- 54.11.4 Training must be recorded including
 - 54.11.4.1 Identity of employee trained
 - 54.11.4.2 Signature of the person who conducted the training
 - 54.11.4.3 Date of the training. Records must be kept 1 year.

BUTADIENE AWARENESS

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BUTADIENE AWARENESS

55.1 PURPOSE

55.1.1 The purpose of this policy is to establish requirements for the use and handling of materials that expose employees to butadiene.

55.2 RESPONSIBILITIES

55.2.1 Manager/Supervisor

- 55.2.1.1 Ensure that all employees are aware of the proper work procedures for butadiene
- 55.2.1.2 Ensure that initial training is conducted for all new employees and that retraining is conducted when employee behaviors suggest that retraining is warranted.
- 55.2.1.3 As part of the JSA and other hazard evaluation processes, identifies and evaluates butadiene hazards and potential exposures during planning and the conduct of work.
- 55.2.1.4 Review and approve task specific safety analysis.
- 55.2.1.5 As necessary, quantitatively determines the presence of butadiene in materials, substrates, and other media. This may involve the collection of samples for analysis by a qualified laboratory or field testing using acceptable test methods.
- 55.2.1.6 Provide results of any butadiene survey to management/supervision, along with information regarding hazard potential and control measures. As appropriate, makes recommendations to management/supervision to maintain, modify, upgrade or downgrade controls accordingly.
- 55.2.1.7 Take prompt corrective measures (or supports any competent person in this role) to eliminate hazards; such as recommending to management/supervision to implement or modify engineering, administrative, work practice and personal protection (including respiratory protection) controls.
- 55.2.1.8 Conduct periodic exposure assessment.
- 55.2.1.9 As appropriate, assist management/supervision in ensuring that workers have the necessary training and medical surveillance based upon the activity and hazard.
- 55.2.1.10 In evaluating butadiene hazards and specifying controls for a job, (a) utilizes reliable historical exposure monitoring data generated for other similar operations or activities, (b) utilizes objective data and/or (c) plans and conducts initial monitoring to determine exposures and assess the effectiveness of hazard controls.
- 55.2.1.11 Conduct initial and periodic exposure monitoring in accordance with NIOSH/OSHA methods if lacking historical or objective data.
- 55.2.1.12 Maintain effective records of jobs monitored, so a historical database can specify controls and eliminate unnecessary and redundant monitoring for future activities.

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- 55.2.1.13 Support project management/supervision in responding to exposures above the PEL when workers were not adequately protected.
- 55.2.1.14 As appropriate, participate in pre-job and daily worker briefings regarding job specific butadiene hazards and controls, work practices/plans, JSAs and other applicable information, including changes made to controls or to the work practices or plans.

55.2.2 Employee

- 55.2.2.1 Follow all requirements regarding the safe work procedures

55.3 CHARACTERISTICS

- 55.3.1 Butadiene is a flammable, colorless gas with a mild, aromatic odor at room temperature and pressure. Butadiene may also exist as a cryogenic liquid. Butadiene is insoluble in water, stable and reacts with oxidizers.

55.4 PHYSICAL HAZARDS

- 55.4.1 Flammable gas
- 55.4.2 Explosive peroxides
- 55.4.3 Fire hazard when exposed to heat, flame or strong oxidizers
- 55.4.4 Release of toxic gases such as carbon monoxide during a fire

55.5 HEALTH HAZARDS

- 55.5.1 There are no recorded cases of accidental exposures at high levels that have caused death in humans, but this could occur.
- 55.5.2 Overexposure can cause respiratory and eye irritation
- 55.5.3 Contact with liquid butadiene can cause burns and frostbite
- 55.5.4 Acute (short term) health hazards include:
 - 55.5.4.1 Central nervous system effects
 - 55.5.4.2 Blurred vision
 - 55.5.4.3 Nausea
 - 55.5.4.4 Fatigue
 - 55.5.4.5 Headache
 - 55.5.4.6 Decreased blood pressure and pulse rate
 - 55.5.4.7 Unconsciousness

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55.5.5 Chronic (long term) health hazards include:

- 55.5.5.1 Cancers of the lymphohematopoietic system (carcinogen)
- 55.5.5.2 Lymphoma
- 55.5.5.3 Leukemia
- 55.5.5.4 Potential reproductive toxicity

55.6 POSSIBLE LOCATIONS, CONTROLS AND RECORDS

- 55.6.1 Butadiene may be present at refineries and petrochemical plants. Butadiene is used in the production of styrene-butadiene rubber and polybutadiene rubber for the tire industry. Other uses include copolymer latexes for carpet backing and paper coating as well as resins and polymers for pipes and automobile and appliance parts. It is also used as an intermediate in the production of such chemicals as fungicides.
- 55.6.2 ZARNAS COMPANIES will institute engineering and work practice controls to reduce and maintain exposures below the permissible exposure limits. When any exposures to butadiene are above the permissible exposure limits ZARNAS COMPANIES will establish and implement a written plan to reduce employee exposures below the PEL. The written plan must be reviewed annually.
- 55.6.3 ZARNAS COMPANIES will have an exposure goal program if butadiene exposures are above the action level. The goal program should include a leak prevention, detection and repair program, a ventilation repair and maintenance program, the use of pump exposure control technology, use of gauging devices and unloading devices. Employees will be trained for the exposure goal program.
- 55.6.4 ZARNAS COMPANIES will keep records related to exemptions from the standard, exposure monitoring, respirator fit testing, medical screening and surveillance. Employee and OSHA access to records will be provided.

55.7 PERMISSIBLE LIMITS

- 55.7.1 No employee can be exposed over the permissible exposure limits of 1 part per million (ppm) butadiene measured as an 8 hour time weighted average and 5 ppm as determined over a sampling period of 15 minutes. ZARNAS COMPANIES will ensure that no employee is exposed over the 8 hour and 15 minute permissible exposure limits for butadiene.

55.8 EXPOSURE MONITORING

- 55.8.1 ZARNAS COMPANIES will conduct initial exposure monitoring for butadiene. If the initial monitoring indicates exposures are above the 8 hour permissible exposure limit, monitoring will be conducted every three months. If above the 15 minute short term exposure limit, monitoring will be conducted every three months. If the initial monitoring indicates exposures are above the action level but below the 8 hour permissible limit, monitoring will be conducted annually.
- 55.8.2 After spills, releases or leaks ZARNAS COMPANIES will conduct exposure monitoring after spills and leaks occur to ensure exposures have returned to a level that existed prior to incident.

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55.8.3 ZARNAS COMPANIES must, within 15 working days after receipt of monitoring results, notify each employee of the results in writing or by posting the results in an accessible location.

55.9 MEDICAL SURVEILLANCE

55.9.1 ZARNAS COMPANIES will provide a medical screening and medical surveillance program for those individuals exposed at or above the action level for 30 or more days a year. ZARNAS COMPANIES will continue to provide medical screening and surveillance for employees even after transfer to a non-butadiene exposed job and regardless of when the employee is transferred.

55.10 REGULATED AREAS

55.10.1 Regulated areas will be established from the rest of the jobsite in any manner that minimizes the number of employees exposed. Access will be limited to authorized persons. Regulated areas are marked with warning signs to alert employees and access is restricted to authorized persons only.

55.11 CONTINGENCY PLAN

55.11.1 ZARNAS COMPANIES will be aware of owner contingency plans. Employees must be informed where butadiene is used on host facility and aware of additional plant safety rules.

55.12 RESPIRATORY PROTECTION AND PPE

55.12.1 Respirators must be selected according to the air concentrations of butadiene measured in the workplace. NIOSH approved air purifying respirators must have organic vapor cartridges or cartridges approved for use with butadiene.

55.12.2 Where appropriate, to prevent eye contact and limit dermal exposure to butadiene ZARNAS COMPANIES will provide protective clothing and equipment at no cost to the employee and will ensure its use.

55.12.2.1 Contact lenses should not be worn when working with this chemical.

55.13 FIRE PROTECTION

55.13.1 Fire extinguishers will be readily available and smoking prohibited in areas where butadiene is present or where butadiene may be released.

55.14 TRAINING

55.14.1 Training will be provided on the health hazards associated with butadiene exposure and any use/handling requirements for butadiene at time of initial assignment and annually.

55.14.2 ZARNAS COMPANIES will ensure employee participation and maintain a written record of the training contents. This training will include:

55.14.2.1 Purpose and description of the medical screening and surveillance program

55.14.2.2 Quantity, location, manner of use, release and storage of butadiene and the specific operations that could result in exposure to butadiene

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- 55.14.2.3 Engineering controls and work practices associated with employee's job assignment
 - 55.14.2.4 Emergency procedures and personal protective equipment
 - 55.14.2.5 Measures employees can take to protect themselves from exposure to butadiene
 - 55.14.2.6 Hazard communication training for potentially exposed employees
 - 55.14.2.7 Training specified by the applicable butadiene standard
 - 55.14.2.8 Respirator training if respirators are to be used
 - 55.14.2.9 Provide information to workers regarding task specific butadiene hazards and control methods, JSA, work practices, medical surveillance and other applicable information, including any changes that are made to these controls
- 55.14.3 All training will be recorded and include the identity of the employee trained, the signature of the person who conducted the training and the date of training.

COMPRESSED GAS CYLINDERS

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COMPRESSED GAS CYLINDERS

56.1 PURPOSE

56.1.1 The purpose of this policy is to cover general procedures for the safe handling compressed gas cylinders and provide recommended safe practices for the storage and transport of cylinders for ZARNAS COMPANIES employees and subcontractors.

56.2 RESPONSIBILITIES

56.2.1 Supervisor

56.2.1.1 Inform and ensure that all employees and subcontractors are following the safe handling procedure set forth in this document at all ZARNAS COMPANIES worksites.

56.2.2 Safety department

56.2.2.1 Develop written compressed gas cylinder policy and revise the program as necessary

56.2.2.2 Develop a training program on the safe handling, use, storage and transportation of compressed gas cylinders

56.2.2.3 Conduct routine inspections to ensure the proper storage and use methods are used

56.2.3 Employee

56.2.3.1 Attend training as necessary

56.2.3.2 Comply with the procedures outlined in this policy

56.2.3.3 Inform a supervisor of any problems, defective equipment or lack of proper storage space for compressed gas cylinders used by them

56.3 GENERAL

56.3.1 Employees must be trained on the proper use, handling and storage of compressed gas cylinders.

56.3.2 When a gas cylinder is received, it will be checked for the following:

56.3.2.1 A stamped hydrostatic test date within the last five years

56.3.2.2 A stenciled or labeled identification of its contents

56.3.2.3 Presence of a valve protection cap

56.3.3 Only use manufacturer approved tools to open and close cylinder valves.

56.3.4 Cylinders should be capped when they are not being used.

56.3.5 When a cylinder becomes empty then it should be marked as *MT* and dated. Empty cylinders must be handled as carefully as full cylinders.

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- 56.3.6 Before using any compressed gas cylinder, be familiar with the respective SDS.
- 56.3.7 Never use adapters to fit valves to cylinders or regulators to valves.
- 56.3.8 Regulators are gas specific and generally not interchangeable. Make sure the regulator and valve fittings are compatible. Never mix gases in a cylinder and only professionals should refill cylinders.
- 56.3.9 Cylinders will be kept far enough away from the actual welding or cutting operations so that sparks or hot flame will not reach them. When this is impractical, fire resistant shields will be provided.
- 56.3.10 Cylinders containing oxygen or acetylene or other fuel gas will not be taken into confined spaces.
- 56.3.11 Compressed air will not be used for cleaning purposes except where the pressure is reduced to less than 30 psi and effective chip guarding and personal protective equipment is implemented.

56.4 IDENTIFICATION AND LABELING

- 56.4.1 The content of compressed gas cylinders will be clearly identified on the cylinder by means of stenciling or stamping on the cylinder or affixed with a label. No compressed gas cylinder should be accepted for use that does not legibly identify its content by name.
- 56.4.2 All compressed gases received, used or stored must be labeled according to DOT and OSHA regulations. Each cylinder must be marked by label or tag with the name of its contents. Such identification should be stenciled or stamped on the cylinder or placed on a label. Do not accept cylinders without the appropriate labels. The primary identifier of cylinder contents is the label.
- 56.4.3 Never rely on the color of the cylinder for identification. Cylinder colors may vary depending on the supplier. Labels on caps have little value because caps are interchangeable.
- 56.4.4 Always read the label. No compressed gas cylinder should be accepted for use that does not legibly identify its contents by name. If the contents cannot be identified, the cylinder should be marked *contents unknown* and returned to the manufacturer.
- 56.4.5 All gas lines leading from a compressed gas supply should be clearly labeled to identify the gas.

56.5 INSPECTION

- 56.5.1 To ensure a safe condition the all cylinders and caps will be visually inspected prior to use and following use. Damage or malfunctioning parts will be reported immediately to the supervisor.
 - 56.5.1.1 Visual inspections will be conducted as prescribed in the hazmat regulations, as they pertain to the type of compressed cylinders under ZARNAS COMPANIES control.
- 56.5.2 Cylinders must be equipped with the correct regulators. These regulators and the cylinder valves will be visually inspected prior to and after use. At a minimum the inspection should include:
 - 56.5.2.1 Condition of regulator protective shield
 - 56.5.2.2 Buildup of grease, oil, dirt and solvents
 - 56.5.2.3 Condition of the gas hose and connections

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56.5.3 All safety valves will be tested frequently and at regular intervals to determine whether they are in good operating condition. Safety valves, controlling devices and other safety appliances need to be constructed, located and installed so they cannot be rendered inoperative by any means.

56.5.4 Hoses and connections should be inspected regularly for damage.

56.6 HANDLING AND USE

56.6.1 Precautions must be taken for care and maintenance of cylinders. There are two types of hazards associated with the use, storage and handling of compressed gas cylinders: the chemical hazard associated with the cylinder contents (corrosive, toxic, flammable, etc.) and the physical hazards represented by the presence of a high pressure vessel.

56.6.2 Compressed gas cylinders should only be handled by those familiar with the hazards and who understand how to safely handle transport and store compressed gas cylinders.

56.6.3 Ensure all cylinders are properly labeled as to the contents.

56.6.4 Move cylinders using a suitable hand truck or cart.

56.6.5 Cylinders must be transported, stored and used upright (with the valve up) and must be securely fastened to prevent them from falling or being knocked over. Suitable racks, straps, chains or stands are required to support cylinders.

56.6.6 Cylinder valves are to be protected with the standard cap when not in use (empty or full). Regulators are to be protected with covers where there is a likelihood of damage.

56.6.7 Never force a cap or regulator. The cap should only be hand tight. When a cap cannot be removed by hand only a company approved competent person may attempt to remove the cap.

56.6.7.1 If a competent person is not available the cylinder will be tagged *Do Not Use* and returned to the designated storage area, for return to vendor.

56.6.8 Cylinders should not be exposed to excessive dampness or to corrosive chemicals or fumes.

56.6.9 Cylinders are not to be exposed to temperature extremes or stored in the vicinity of combustibles.

56.6.10 Gases are not to be transferred from one vessel to another (except dry ice and cryogenic materials). Do not try to refill a compressed gas cylinder.

56.6.11 Disposal gas cylinders, including lecture bottles, will not be refilled. It is against DOT regulation to refill or reuse a disposable gas cylinder.

56.6.12 Never use a cylinder without a regulator. Always use the correct pressure regulator.

56.6.13 After attaching the regulator and before the cylinder is opened, check the adjusting screw of the regulator to see that it is released. Never permit the gas to enter the regulator suddenly.

56.6.14 Never try to stop a leak between a cylinder and regulator by tightening the union nut unless the valve has been closed first

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- 56.6.15 Never strike an electric arc on a cylinder.
- 56.6.16 Every air receiver will be equipped with an indicating pressure gauge, so located as to be readily visible and with one or more spring loaded safety valves. The total relieving capacity of such safety valves will be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10%.
 - 56.6.16.1 The drain valve on air receivers will be opened and receiver completely drained frequently at intervals to prevent accumulation of excessive amounts of liquid in receiver.
- 56.6.17 Never use a leaking, corroded or damaged cylinder. Leaking cylinders will be moved to an isolated, well-ventilated area, away from ignition sources. Soapy water should be used to detect leaks. If the leak is at the junction of the cylinder valve and cylinder, do not try to repair it. Remove the cylinder from service and contact the supplier for return.

56.7 STORAGE

- 56.7.1 Because of the high internal pressure in compressed gas cylinders, they can become projectiles if stored in a manner that could damage the valve. Leaking cylinders can also cause an atmospheric hazard or create an oxygen deficient atmosphere. Due to the hazards associated with compressed gas cylinders, the following rules for storing compressed gas cylinders will be followed at all times.
- 56.7.2 Storage areas for full and empty cylinders must be designated and labeled. Cylinders should be stored in definitely assigned places away from elevators, stairs or gangways.
- 56.7.3 Cylinders must be secured at all times in such a way as to avoid them being knocked over or damaged, must be stored in a vertical position, not stored in public hallways and segregated based upon contents. Group and store compressed gases based on their hazard class.
- 56.7.4 Cylinders containing flammable gases must not be stored in close proximity to open flames, areas where electrical sparks are generated or where other sources of ignition might be present. Oxygen cylinders, full or empty, should never be stored in the same vicinity as flammable gases. Proper storage of oxygen cylinders require a minimum of 20 feet between flammable gas cylinders or areas need to be separated, at a minimum, by a firewall 5 feet high with a fire rating of at least one hour.
- 56.7.5 Hoses should be stored in cool areas and protected from damage.
- 56.7.6 Greasy and oily materials must never be stored around oxygen cylinders. Fittings must never be greased or oiled.
- 56.7.7 Always store cylinders in an upright position, on a level floor and secure them using a restraint such as chains, sturdy straps or plastic coated wire or attach the cylinder to a non-tip base.
- 56.7.8 Restraints must be fastened on the upper half of the cylinder – above the center of gravity.
- 56.7.9 Cylinders will not be kept in unventilated enclosures such as lockers and cupboards. Storage areas should be dry, well-drained, ventilated and fire-resistant.
- 56.7.10 Empty and full or partially full cylinders should be stored in separate areas. Designated storage areas for full and empty cylinders must be identified and labeled.

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56.7.11 Cylinders must be protected from damage, corrosion, sunlight and kept away from heat sources. Do not subject cylinders to temperature extremes.

56.7.12 Hoses and connection should be stored in a cool dry area and protected from damage.

56.7.13 Cylinders will not be stored in hallways, paths of egress, stairways or other high traffic areas.

56.7.14 Cylinders not in use will have the valve closed and valve cap in place.

56.7.15 Stored cylinders should be visually inspected on a routine basis, for leakage or other problems.

56.8 TRANSPORTATION

56.8.1 Cylinders that contain compressed gases are primarily shipping containers and should not be subjected to rough handling or abuse. Such misuse can seriously weaken the cylinder and render it unfit for further use or turn it into a rocket having sufficient thrust to drive it through masonry walls.

56.8.2 When transporting compressed gas cylinders, the following rules will be followed at all times.

56.8.3 Ensure cylinders are properly labeled as to the contents.

56.8.4 Regulators will be removed and valve protection caps put in place before the cylinder is moved.

56.8.5 Cylinder caps or the neck of a cylinder will not be used for lifting purposes.

56.8.6 Do not subject cylinders to rough handling or abuse. Cylinders should not be dropped or permitted to strike violently and protective caps are not used to lift cylinders.

56.8.7 Cylinders should only be transported in freight/cargo elevators only, not on passenger elevators.

56.8.8 Secure and move cylinders with a suitable hand truck, lift truck or crane with a cradle or platform.

56.8.9 Secure cylinders with a strap or chain when using a designated cart. Only one cylinder should be handled at a time unless a two cylinder cart is used and each cylinder is restrained separately.

56.8.10 Cylinders must be transported in a vertical secured position using a cylinder basket or cart. Never roll or drag a cylinder when transporting.

56.9 TRAINING

56.9.1 Employees will be trained on compressed gas cylinder safety. Training will include:

56.9.1.1 Cylinder identification

56.9.1.2 Cylinder inspection

56.9.1.3 Cylinder handling, storage and use

56.9.2 Cylinder transportation

BLAST MEDIA CONTROL PLAN

Revision Date: 10/2016



BLAST MEDIA CONTROL PLAN

57.1 PURPOSE

57.1.1 The purpose of this policy is to ensure that the initial determination for potential abrasive blasting or particulate exposure has been accomplished before work begins.

57.2 GENERAL

57.2.1 Wet methods have been used to reduce dustiness associated with blasting projects. Both high pressure water alone and water mixed with abrasive have been used. Use abrasives that can be delivered with water (slurry) to reduce dust.

57.2.2 Have containment in place and checked visibly for leaks.

57.2.3 All containment structures should be ventilated to maintain a continuous airflow and prevent any leakage of dust to the outside. Exhaust air should be discharged to the outside through an appropriate opening. Blowers should be set up so that accumulated dust can be removed without contaminating work areas and dust collectors will be utilized as required.

57.2.4 Avoid blasting in windy conditions.

57.2.5 Park their cars where they will not be contaminated with silica and other substances.

57.2.6 On daily JSA note that the conditions of this plan are in place.

57.2.7 During work shift ground area surrounding water tank can be wet down by means of water hose to eliminate dispersion of ground dust.

EQUIPMENT SHUTDOWN PROCEDURE

Revision Date: 10/2016



EQUIPMENT SHUTDOWN PROCEDURE

58.1 PURPOSE

58.1.1 This policy addresses acceptable equipment shutdown procedure guidelines for ZARNAS COMPANIES.

58.2 EQUIPMENT SHUTDOWN VERIFICATION

58.2.1 All equipment such as but not limited to generators, compressors, blast pots, power washers must be shut down at end of all shifts every day.

58.2.2 It is the sole responsibility of the ZARNAS COMPANIES' assigned foreman to ensure all equipment has been de-energized while not in use and at end of shift and on weekends.

58.2.3 At the closure of business, the foreman will walk down the project site to verify all equipment has been shut down/de-energized. Upon verification the assigned ZARNAS COMPANIES' project foreman will accept responsibility that all equipment is de-energized and in good condition.

58.2.4 ZARNAS COMPANIES' project foreman will notify management if any equipment is damaged or not in safe working order. It is the responsibility of the ZARNAS COMPANIES' foreman to notify management if equipment needs repair.

58.2.5 Only qualified persons will attempt field repairs of field equipment. Basic maintenance of field equipment is outlined in operator's manual and placards identifying items such as oil, hydraulic fluids, filters and/or connections.



ICE SAFETY

59.1 PURPOSE

59.1.1 This policy addresses acceptable guidelines and training, documentation requirements to assure safety of all employees working on or around ice and snow covered surfaces.

59.2 SAFETY PRECAUTIONS

59.2.1 Attachable ice cleats will be issued to all employees working on/around icy surfaces.

59.2.2 ZARNAS COMPANIES' safety director will instruct employees of proper use and precautions as identified in manufacturer instructions.

59.2.3 All employees will sign on training roster understanding this is a mandatory requirement while working on/around icy surfaces.

59.2.4 Ice cleats will only be used on exterior ground surfaces.

59.3 RESTRICTIONS

59.3.1 Cleats will not be worn inside tanks or any fixed or temporary structure including all ladders.

59.3.2 Cleats will not be worn while operating any mobile equipment.

59.3.3 Cleats will not be worn inside any administrative, gang or equipment trailers.

59.4 INSPECTION

59.4.1 ZARNAS COMPANIES' employees wearing cleats will do a visible inspection on a daily basis while in use, this will consist of cleats and connecting straps. Any damage to cleat will be reported to ZARNAS COMPANIES supervision/safety and replaced immediately. All falls or related injuries will be reported to ZARNAS COMPANIES supervision/safety immediately.

VEHICLE RETURN SAFETY

Revision Date: 10/2016



VEHICLE RETURN SAFETY

60.1 PURPOSE

60.1.1 The purpose of this policy is to protect the safety of workers operating company vehicles.

60.2 PERSONAL USE

60.2.1 Company vehicles are provided primarily for business purposes; however, occasional personal use is permitted pending approval from management.

60.2.2 Any vehicles not in use for a specific project must be returned to corporate office and may not be used other than for company projects. Only ZARNAS COMPANIES' company vehicles will be used on ZARNAS COMPANIES projects.

60.2.3 The purpose of returning a company vehicle when not assigned to a project is to ensure vehicle is maintained, serviced and inspected.

60.3 USE OF COMPANY VEHICLE

60.3.1 Personal trailers, including boat and recreational vehicles, are not to be pulled.

60.3.2 Company vehicle is not to be driven while under the influence of alcohol or any controlled substance.

60.3.3 Possession, transportation or consumption of alcohol or illegal drugs by anyone in the vehicle is not allowed.

60.3.4 Driver and all passengers must wear available personal restraints.

60.3.5 Cellular telephone use is prohibited while driving unless hands free devices are used.

60.3.6 Texting while driving is prohibited.

60.3.7 Report any accident immediately to the Safety Director (Dean P. Warren 484-725-3805).

60.3.8 Any exceptions to these rules requires advance written approval by approved ZARNAS COMPANIES manager or officer. Violation of these rules will result in disciplinary action from removal of driving privileges to termination of employment.

60.4 MAINTENANCE

60.4.1 Authorized drivers are required to properly maintain company vehicles while in their possession at all times.

60.4.2 Vehicles should not be operated with any defect that would inhibit safe handling during current and foreseeable weather and lighting conditions.

60.4.3 Preventive maintenance includes, but is not limited to:

60.4.3.1 Oil changes

VEHICLE RETURN SAFETY

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- 60.4.3.2 Lubrication
 - 60.4.3.3 Tire pressure/tire replacement
 - 60.4.3.4 Brake pad and rotor replacement
 - 60.4.3.5 Fluid checks
- 60.4.4 This will determine to a large extent whether you will have a reliable, safe vehicle to drive and support work activities. You should have preventive maintenance on your vehicle, as required in the owner's manual, performed by a certified mechanic.
- 60.4.5 Should your vehicle need service or repair please notify Andy Bertalan 610-866-0923.

WORKSITE CELL PHONE POLICY

Revision Date: 10/2016



WORKSITE CELL PHONE POLICY

61.1 PURPOSE

61.1.1 The purpose of this policy is to express ZARNAS COMPANIES attitude towards the use of cell phones in the workplace. We recognize that cell phones (and smartphones in particular) have become an integral part of life. We are also certain that they may be a great asset in the workplace if used correctly (for productivity apps, calendars, business calls etc.). However, cell phones may also cause problems when used imprudently or excessively. It has, therefore, become apparent that a policy that clarifies the allowances and restrictions of cell phone use is necessary.

61.2 POLICY ELEMENTS

61.2.1 Despite their benefits, cellphones may be cause for significant problems in the workplace. The reasons for this include:

- 61.2.1.1 Distraction of employees by regularly checking their phones
- 61.2.1.2 Time subtracted from actual working hours by the mundane use of cell phones
- 61.2.1.3 Interference on colleagues' jobs by speaking on the phone
- 61.2.1.4 Security issues from unfair use of company-issued equipment or misuse of the ZARNAS COMPANIES internet connection
- 61.2.1.5 Incidents that may occur when employees use their phones inside company vehicles or near forbidden areas
- 61.2.1.6 Company-issued phones are to be used for business purposes only and be preserved in perfect condition
- 61.2.1.7 Use of a phone for any action while driving a company vehicle is prohibited
- 61.2.1.8 Use of cell phones within earshot of someone else's working space during working hours is not allowed
- 61.2.1.9 Download or upload of inappropriate, illegal or obscene material through a corporate internet connection is prohibited
- 61.2.1.10 Use of a cell phone's camera or microphone to record confidential information is strictly prohibited
- 61.2.1.11 Employees cannot use their phones at areas where there is an explicit prohibition signs (ex. jobsites)
- 61.2.1.12 Employees must turn off their phones or keep them on vibrate whenever asked
- 61.2.1.13 Surfing the internet, texting and talking on the phone should be restricted to breaks and lunch

WORKSITE CELL PHONE POLICY

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61.2.1.14 Playing games on the cell phone during working hours is prohibited

61.3 DISCIPLINARY CONSEQUENCES

61.3.1 ZARNAS COMPANIES retains the right to monitor employees for excessive or inappropriate use of their cell phones. If it is discovered that an employee's phone usage causes a decline in productivity or interferes with the smooth workflow in the workplace, ZARNAS COMPANIES will ban that employee from using their cell phones.

61.3.2 For an action that constitutes a breach of security, violation of the confidentiality policy or cause of an accident the employee may face severe disciplinary repercussions up to and including termination.

OPERATOR QUALIFICATION PROGRAM

Revision Date: 10/2016



OPERATOR QUALIFICATION PROGRAM

62.1 PURPOSE

- 62.1.1 The purpose of this policy is to comply with the Office of Pipeline Safety of the US Department of Transportation's (DOT) Qualification of Pipeline Personnel Regulation (49 CFR Part 192 Subpart N and Part 195 Subpart G). This program applies to ZARNAS COMPANIES' DOT facilities and employees of ZARNAS COMPANIES. ZARNAS COMPANIES fundamentally believes that its employees and contractors are technically qualified to perform their work assignments on ZARNAS COMPANIES' facilities, based on the current training program, on ZARNAS COMPANIES' safety record and on ZARNAS COMPANIES' operational record. ZARNAS COMPANIES' OQ program is designed to ensure that all individuals working on ZARNAS COMPANIES' DOT-regulated pipeline facilities are OQ-qualified to perform specific covered tasks, to document that qualification and to reduce the probability and consequences of incidents and accidents.
- 62.1.2 All ZARNAS COMPANIES employees as well as contractors performing these covered tasks will be OQ qualified under this program before they perform any covered tasks. This plan will be periodically reviewed and revised to reflect changes in ZARNAS COMPANIES OQ program.

62.2 RESPONSIBILITIES

62.2.1 ZARNAS COMPANIES

- 62.2.1.1 Have several OQ coordinators who will be located in the field identify areas where the program or specific tasks need to be modified and perform other tasks as listed in their job description.
- 62.2.1.2 Approve each case of a proctor reading a written evaluation to a worker and writing the worker's response prior to this technique being utilized by a proctor.
- 62.2.1.3 Set up a procedure to ensure that each worker and supervisor is aware of worker's current OQ qualifications and of worker's schedule for subsequent OQ qualification.
- 62.2.1.4 Additional responsibilities as described in this program.

62.2.2 Employee

- 62.2.2.1 Be aware of his/her own schedule for subsequent OQ qualification.
- 62.2.2.2 Knowing what the covered tasks are and for which covered tasks they are OQ qualified.
- 62.2.2.3 Notify supervisor of all evaluations, whether or not evaluation was successfully passed.
- 62.2.2.4 Notify supervisor if assigned any covered tasks for which they are not OQ qualified.
- 62.2.2.5 Notify ZARNAS COMPANIES through the Management of Change process of any changes in equipment, technology, procedures or technique which could affect the OQ program, covered task evaluations and identified abnormal operating conditions.

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- 62.2.3 Supervisor
 - 62.2.3.1 Ensure that workers remain current in his/her OQ qualifications.
 - 62.2.3.2 Know which covered tasks his/her workers are OQ qualified for, with regards to making work assignments.
 - 62.2.3.3 Notify ZARNAS COMPANIES through the Management of Change process of any changes in equipment, technology, procedures or technique which could affect the OQ program, covered task evaluations and identified abnormal operating conditions.

62.3 DEFINITIONS

- 62.3.1 *Abnormal operating condition (AOC)* - a condition identified by ZARNAS COMPANIES that may indicate a malfunction of a component or deviation from normal operations that may indicate an operating condition that could exceed design limits or could result in hazard(s) to persons, property or the environment.
- 62.3.2 *Accident* - refer to 49 CFR 195.50 a failure in which there is a release of the product in the pipeline resulting in any of the following:
 - 62.3.2.1 Explosion or fire not intentionally set by the operator.
 - 62.3.2.2 Release of 5 gallons or more of hazardous liquid or carbon dioxide, except that no report is required for a release of less than 5 barrels resulting from pipeline maintenance activity if release is not otherwise reportable, not one described in § 195.52(a)(4), confined to company property or pipeline right-of-way and/or cleaned up promptly.
 - 62.3.2.3 Death of any person
 - 62.3.2.4 Personal injury necessitating hospitalization
 - 62.3.2.5 Estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others or both, exceeding \$50,000
- 62.3.3 *Covered task* - a discrete activity performed by an individual or group of individuals; has a beginning and ending point; has two or more steps; is performed over a short period of time; can be observed and measured; results in a product, service or decision, identified by ZARNAS COMPANIES, that meets all four of the following requirements:
 - 62.3.3.1 Is performed on a pipeline facility - any activity that is performed by an individual or group of individuals whose performance directly impacts the pipeline facility.
 - 62.3.3.2 Is an operations or maintenance task - activities done to perform a function on a pipeline facility or to provide upkeep of a pipeline facility. A *new construction task* changes to an operations and maintenance task the new pipeline facility is being commissioned or during the act of connecting to an active pipeline facility. Activities on pipelines that have never been in service, fabrication of new installations, replacement upgrades that increase pipeline capacity/throughput and non-operational emergency response activities are not operations and maintenance tasks.

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- 62.3.3.3 Is performed as a requirement in 49 CFR Part 192/195.
- 62.3.3.4 Affects the operation or integrity of the pipeline - any activity or omission of an activity that could directly or indirectly cause the release of natural gas or hazardous liquids to the environment or result in a hazard to persons or property.
- 62.3.4 *Evaluation* - a process, established and documented by ZARNAS COMPANIES, to determine a worker's knowledge, skill and ability to perform a covered task.
- 62.3.5 *Incident* - An event that results in an emergency shutdown of an LNG facility. Activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident. An event that involves a release of gas from a pipeline or of liquefied gas from an LNG facility, and that results in a death or personal injury necessitating in-patient hospitalization, estimated property damage of \$50,000 or more, including loss to the operator and others, or both, but excluding cost of gas lost and/or unintentional estimated gas loss of three million cubic feet or more.
- 62.3.6 *Individual* - a person, who on behalf of ZARNAS COMPANIES, performs one or more covered tasks. This includes regular employees, part-time employees and contractors.
- 62.3.7 *Operation* - the starting, stopping and monitoring of the pipeline system. The operation of the pipeline refers to any changed conditions in the pipeline, such as pressure or flowrate.
- 62.3.8 *Qualified* – a worker has passed an evaluation and can perform assigned covered tasks, can recognize and react to abnormal operating conditions and has completed compliance documentation.

62.4 COVERED TASKS

- 62.4.1 For the purposes of this program, a covered task is an activity that is performed directly on the pipeline facility, is an operation or maintenance task, is performed as a requirement of either Part 192 or Part 195 and affects the operation or integrity of the pipeline.
- 62.4.2 The covered task list was developed to include all covered tasks performed by ZARNAS COMPANIES workers and contractors. They are also be developed so that anyone OQ-qualified in that covered task is able to perform all parts of that covered task.
- 62.4.3 A covered task may describe a broad area of expertise which includes several sub-tasks that would not be performed by all individuals performing the broad covered task.
- 62.4.4 A sub-task may be broken out into a separate new covered task in order to more effectively assign evaluation requirements.
- 62.4.5 A covered task may be written in general terms for several types of components with evaluations written for specific components. These specific evaluations will be identified as such in the evaluation title.

62.5 ABNORMAL OPERATING CONDITIONS

- 62.5.1 Abnormal operating conditions are associated with the actual performance of a task and are included as knowledge questions and skills checklist steps within the evaluations for that task. In addition, there are other AOCs that an individual could encounter while performing a covered task but which are not directly related to that task.

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- 62.5.2 A deviation from normal operations does not necessarily mean an abnormal operating condition exists as long as conditions are within the parameters identified by ZARNAS COMPANIES.
- 62.5.3 Items listed below may be indications of an abnormal condition or may create an abnormal operating condition related to a specific covered task. Workers and contractors are trained and evaluated to recognize and properly respond to AOCs. The general AOC categories below are evaluated using a knowledge test, while specific AOCs are evaluated in the knowledge tests and skills checklists associated with specific covered task evaluations.
- 62.5.4 Abnormal operating conditions fall into the following categories:
 - 62.5.4.1 Unexpected hydrocarbon encountered (unauthorized release, vapors, hazardous atmosphere and contamination)
 - 62.5.4.2 Unexpected pressure deviations (increase, decrease, high, low, absent)
 - 62.5.4.3 Activation of a safety device (pressure relief, emergency shut downs, high pressure shutdowns, case pressure shutdowns, high temperature shutdowns)
 - 62.5.4.4 Unexplained flow rate deviations (high flow, low flow, no flow)
 - 62.5.4.5 Unexplained status change (unit start-up, unit shut-down, valve open, valve close, gravity change, tank level, temperature, flash, haze, sediment and water, co-mingling of product, etc.)
 - 62.5.4.6 Fire/Explosion
 - 62.5.4.7 Interruption or failure of communications/control system/power
 - 62.5.4.8 Pipeline system damage (line hit, lightning strikes, tornado, flood, earthquake, etc.)
 - 62.5.4.9 Abnormal facility condition (exposed pipe, low cathodic protection levels, missing line markers, frayed wires, line crossing, atmospheric corrosion, pipeline support, exposed river crossing)
 - 62.5.4.10 Component failure or malfunctioning component (field and SCADA components including meter failure)
 - 62.5.4.11 Earth movement or washouts that have exposed pipe or could affect pipeline integrity, including strain and stress due to external load.
- 62.5.5 AOCs are considered during investigation of a DOT accident/incident to ensure the AOCs identified and used in evaluating individuals are representative of those that could reasonably be anticipated during performance of covered tasks.
- 62.5.6 Since job responsibilities may vary based on location regardless of job title, covered tasks will be assigned on a per-employee basis by the employee's supervisor.
- 62.5.7 ZARNAS COMPANIES has a wide variety of equipment throughout the company. ZARNAS COMPANIES recognizes that most of the equipment within each equipment group (such as high level alarms, line locators or gauging tools) have enough similarities that each equipment group may be evaluated using the same evaluation tools, even though the equipment may have different brand

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names. In evaluating the proper use of the equipment, ZARNAS COMPANIES refers back to the manufacturer's instruction for use, maintenance, repair and calibration is essential. For many of these equipment groups, the manufacturer's instructions are the primary source of information, and these instructions have not been included in many of ZARNAS COMPANIES' procedures, due to the obvious disadvantages of duplicating information in several different manuals or files.

62.5.8 ZARNAS COMPANIES' operations also vary throughout the company. Many pipelines in each area have similar hydraulics and operating characteristics which are specific to that area and are consistent among all of the pipelines in that area. On such similar pipelines, a successful skill evaluation on one pipeline is sufficient to show success in operating the other pipelines, in that those pipelines have the same essential variables.

62.5.9 Training on how to recognize and respond to AOCs is provided initially to new employees and regularly to all individuals who may encounter an AOC on the job. Contractors are trained on site specific AOCs in accordance with ZARNAS COMPANIES' *Health, Safety and Environmental Policies and Procedures*.

62.6 OQ QUALIFIED NEW HIRES

62.6.1 When a worker with OQ qualifications is newly hired by ZARNAS COMPANIES, that worker's OQ qualifications do not automatically transfer. The new worker's supervisor must review any available documentation for worker's OQ qualifications and will decide if OQ qualifications will transfer. The new worker must pass an initial OQ qualification for any covered tasks where approved OQ qualifications are absent. Non-transferred qualifications will be evaluated as initial qualifications before the worker is allowed to independently perform covered, non-transferred, tasks.

62.7 USE OF NON-OQ QUALIFIED WORKERS

62.7.1 Any worker (including ZARNAS COMPANIES employees or contractors), who does not have the appropriate OQ qualification, cannot perform that covered task without direction and observation by an OQ qualified individual who can take immediate corrective action when necessary. ZARNAS COMPANIES will allow workers that are not OQ qualified to perform a covered task for ZARNAS COMPANIES provided the following conditions are met:

62.7.1.1 The non-OQ qualified worker(s) must be directed and observed by an individual that is OQ qualified in that specific covered task.

62.7.1.2 The OQ qualified worker observing the non-OQ qualified worker must be able to recognize and react to abnormal conditions and take immediate corrective action when necessary.

62.7.1.3 The OQ qualified individual must be able to effectively communicate direction of covered task activities and reaction to AOCs to non-OQ qualified worker(s). This may require the ability to communicate with workers who speak and comprehend languages other than English either directly or through the use of a translator.

62.8 CONTRACTORS

62.8.1 For the purposes of OQ, the term contractor includes individuals who are not ZARNAS COMPANIES employees and who perform covered tasks on ZARNAS COMPANIES facilities.

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- 62.8.2 Each contractor performing covered tasks on a ZARNAS COMPANIES' facility must have an action plan that is compatible with ZARNAS COMPANIES' OQ Program. Before a contractor's personnel may perform a covered task on ZARNAS COMPANIES facility, without being directed and observed by a qualified individual, ZARNAS COMPANIES personnel will perform an initial audit of contractor's OQ action plan by:
 - 62.8.2.1 Review contractor's OQ action plan to ensure it complies with ZARNAS COMPANIES' OQ program
 - 62.8.2.2 Verify contractor has identified covered tasks that their employees will be performing for ZARNAS COMPANIES
 - 62.8.2.3 Verifying that OQ qualified contractor's employees are included in the contractor's OQ action plan
- 62.8.3 Once contractor OQ action plan has been approved by ZARNAS COMPANIES, contractor has several options to enable their workers to perform covered tasks for ZARNAS COMPANIES:
 - 62.8.3.1 Qualification of workers through a third party vendor approved by ZARNAS COMPANIES
 - 62.8.3.2 Provide contractor's workers who are OQ qualified and can direct and observe an OQ non-qualified individual perform that covered task, including provision for communication with workers who speak and comprehend languages other than English either directly or through the use of a contractor provided translator.
- 62.8.4 The following options are only available in rare circumstances and must be approved by ZARNAS COMPANIES before the contractor will be allowed to utilize them.
 - 62.8.4.1 Qualification of their employees through the contractor's in-house evaluation process, including in-house evaluators that are either qualified in the covered task being evaluated or are subject matter experts in the covered task.
 - 62.8.4.2 Have the contractor's employee pass ZARNAS COMPANIES evaluation.
- 62.8.5 Contractors performing covered tasks for ZARNAS COMPANIES will be notified of any modifications to ZARNAS COMPANIES OQ plan or covered tasks.
- 62.8.6 ZARNAS COMPANIES will conduct periodic audits of contractor's OQ action plan to ensure continued compliance with ZARNAS COMPANIES OQ program.
- 62.8.7 Recordkeeping for contractors' employees' OQ qualifications must be accessible by ZARNAS COMPANIES personnel at any time.

62.9 MANAGEMENT OF CHANGE

- 62.9.1 Changes to the covered tasks, to the evaluation tools, and to the OQ Program will be made in accordance with the appropriate Management of Change (MOC) policy.
- 62.9.2 Specific procedures for certain covered tasks may change over time due to new or revised company policies and procedures, new equipment, new vendor recommendations, new safety considerations, and/or new regulations. ZARNAS COMPANIES will ensure these changes are developed and

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communicated to the appropriate OQ qualified personnel according to the appropriate MOC policy. ZARNAS COMPANIES will also determine if the changes are substantive enough to require re-qualification of OQ qualified individuals already performing the task being modified. If the changes do require re-qualification, ZARNAS COMPANIES will communicate to those individuals and their supervisors, that they cannot perform the covered task independently until re-qualified.

- 62.9.3 ZARNAS COMPANIES OQ Program may be modified as a result of experience with the OQ Program (for both content and format), as covered tasks are added/deleted, as specific worker's responsibilities change and as regulations change. When such a change is made, a modified copy will be made available by ZARNAS COMPANIES to all affected individuals. All program modifications will be made according to the appropriate MOC policy and will indicate the severity of the modification as it relates to OQ. All affected individuals will be notified immediately if the modification requires requalification.

62.10 RECORDKEEPING

- 62.10.1 The record of prior OQ qualifications for individuals with current OQ qualifications and the records of individuals no longer performing the covered task will be maintained for a period of five years. Supporting documentation will be kept for five years and includes:
 - 62.10.1.1 Retention of work performance history evaluation in either paper copy or electronic format, for the current OQ qualification.
 - 62.10.1.2 Retention of skills evaluation checklist in use at the time of the evaluation.
 - 62.10.1.3 Retention of computer-based evaluations used at the time of the evaluation.
 - 62.10.1.4 Retention of vendor or outside industry organization certifications - documentation supporting the current OQ qualification will be accessible in either paper copy or electronic format.
 - 62.10.1.5 Retention of evaluator identification and type of evaluation.
- 62.10.2 Supporting documentation for contractors will be maintained per the guidelines established by the third party vendors conducting the evaluations as reviewed by ZARNAS COMPANIES prior to being approved as an acceptable vendor.

62.11 TRAINING/EVALUATION PROCESS

- 62.11.1 Transitional OQ qualification
 - 62.11.1.1 Workers who performed specific covered task prior to October 28, 1999 will be evaluated for this level of OQ qualification on that specific covered task by October 28, 2002. This OQ qualification can be met by a satisfactory review of work history. If the review of work history indicates no problems in a worker's performance of the covered task, that worker will be transitionally OQ qualified. If there are OQ qualification problems documented as a result of the review of work history, the worker must attain initial OQ qualifications.
- 62.11.2 Initial OQ qualification
 - 62.11.2.1 Workers who have not successfully performed specific covered task on ZARNAS COMPANIES facilities prior to August 27, 1999 will be evaluated for this OQ qualification level. This OQ qualification level cannot be met by reviewing work history as the sole

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evaluation method; the evaluation must include one of the other evaluation methods. Workers will receive training, as appropriate, in preparation for initial qualification evaluations, as part of ZARNAS COMPANIES training program. Trainees will not be allowed to independently perform covered tasks until qualification evaluations are passed.

- 62.11.3 In ZARNAS COMPANIES OQ Program, each covered task will be assigned a subsequent OQ qualification interval. This interval will initially be three years for each covered task - three years was chosen to be consistent with existing PSM program. The interval can be modified by ZARNAS COMPANIES based on periodic studies of covered task variables; such as, critical nature, how often performed, complexity and safety sensitivity.
- 62.11.4 ZARNAS COMPANIES employees and contractors performing covered tasks are OQ-qualified by evaluating their knowledge, skill and ability. On most tasks this is accomplished by using a knowledge test and skill evaluation. The following are all of ZARNAS COMPANIES evaluation methods:
 - 62.11.4.1 Knowledge test - The worker will respond in writing to a written evaluation question. The preferred type of question will be multiple choice, but other types of questions will be acceptable. The number of questions on each test will vary depending on the complexity of the task and ZARNAS COMPANIES employees are expected to get an 80% or better grade to pass. Contractor employees are expected to meet the pass/fail criterion established by ZARNAS COMPANIES approved vendor or industry organization. This evaluation may be either computer-based or paper copy.
 - 62.11.4.2 Oral exam - The worker will respond orally to the questions. The evaluator will transcribe the worker's answer onto the appropriate form.
 - 62.11.4.3 Work performance history review - upon verification that worker has performed the covered task and files do not contain an indication of unsatisfactory performance. The worker will not pass a work performance history evaluation if an indication of unsatisfactory performance has been identified. That individual must then take the OQ qualification evaluation in one or more of the other approved evaluation methods.
 - 62.11.4.4 Skills checklist - A trained evaluator will utilize a validated, step-by-step skills checklist to evaluate the worker either by:
 - 62.11.4.4.1 Performance on the job - The evaluator will utilize the skills checklist for that covered task to determine that all appropriate steps have been performed. The evaluator can allow a discussion of the actual process rather than have the worker actually perform the complete process, due to restrictions on the availability of specific components or equipment, pipeline systems or other necessary items. Evaluators are trained to utilize actual performance of the task as the first priority and to minimize use of discussion of performance.
 - 62.11.4.4.2 Performance on a simulator - The simulator may also provide a pass/no pass grade of the worker's performance.
 - 62.11.4.5 Numerous vendors and industry organizations such as MEA, API, National Center for Construction Education and Research (NCCER), National Association of Corrosion Engineers (NACE) or American Society of Mechanical Engineers (ASME) have existing programs which pertain to specific covered tasks. Once the vendor or industry organization

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program is approved by ZARNAS COMPANIES, a worker will be considered OQ qualified for that specific covered task when the qualification documentation is received. ZARNAS COMPANIES will monitor all approved vendor and industry programs and review any changes to ensure continued compatibility with ZARNAS COMPANIES OQ Program.

- 62.11.5 OQ qualified workers who perform the specific covered task will be evaluated before or during the final year of the subsequent OQ qualification interval for that task (third year). If the subsequent OQ qualification does not take place before December 31 of the third (or final) year of the interval, the worker will be deemed unqualified to perform that task. This OQ qualification level cannot be met by reviewing work history as the sole evaluation method; the evaluation must include one of the other evaluation methods. Each worker should be aware of his/her own schedule for subsequent OQ qualification. The worker's direct supervisor will be responsible for ensuring that the individual remains current in his/her OQ qualifications.
- 62.11.6 If a worker fails an evaluation on a covered task, their OQ qualification on that task is revoked. They must then follow existing ZARNAS COMPANIES policies and procedures for retraining, as appropriate, and then successfully complete the failed evaluation before their OQ qualification is reinstated. The employee must spend a period of time retraining, at the discretion of local management, before being allowed to retake a failed evaluation. Under normal circumstances, this period of retraining and re-evaluation time should be 24 to 48 hours.
- 62.11.7 Each DOT accident/incident will be reviewed in accordance with ZARNAS COMPANIES procedure. A worker involved in a DOT accident/incident involving one or more covered tasks associated with the event must be suspended from performing such covered tasks until a root cause for the accident/incident is determined. This includes any worker who was performing the task firsthand or directing and observing the performance of the task.
 - 62.11.7.1 If the investigation determines that the actions of the worker did not contribute to the accident/incident, the suspension will be removed and the qualification reinstated.
 - 62.11.7.2 If the investigation determines that the actions of an OQ qualified worker performing and/or directing and observing the performance of a covered task contributed to an accident/incident, that worker's OQ qualification(s) on the specific covered task identified must be immediately revoked by notifying ZARNAS COMPANIES, who will enter the revocation into the recordkeeping system. Management of the revoked worker must provide an explanation detailing the investigation findings regarding OQ. Worker must be retrained as appropriate. Once the worker has completed the required training and requalification, management of the revoked worker must contact ZARNAS COMPANIES to confirm the employee is ready for reinstatement. ZARNAS COMPANIES will document the reinstatement in the record retention database.
- 62.11.8 Until a worker's qualifications have been reinstated from a suspended or revoked status, that employee is considered a non-qualified individual for the revoked or suspended task.
- 62.11.9 An OQ qualified worker would be placed in an unsatisfactory performance re-evaluation category for reasons including but not limited to unsatisfactory performance of a covered task or if ZARNAS COMPANIES management believes the worker can no longer satisfactorily perform the covered task. ZARNAS COMPANIES management will discuss the workers performance and the worker's OQ qualification on that specific covered task will be revoked. The revocation will continue until that

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worker has been re-OQ qualified on the covered task in question. The method of re-qualification will be determined by the worker's supervisor. A worker with a revoked OQ qualification may continue to perform other covered tasks for which he/she is still OQ-qualified.

- 62.11.10 Re-evaluation and re-qualification may be required if a worker meets one of the following criteria:
 - 62.11.10.1 Has spent excessive time away from a job due to disability, special assignment or a change in job duties. Excessive time is considered on a case by case and task by task basis with consideration given to task difficulty, worker's prior experience and the nature of their absence from the job.
 - 62.11.10.2 Significant changes to equipment or procedures has altered a worker's ability to perform a covered task.
- 62.11.11 If there is reason to believe an individual is no longer qualified to perform a covered task, the supervisor will conduct a review and determine whether training, re-qualification and/or other action is warranted.

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63.1 PURPOSE

63.1.1 The purpose of this policy is to emphasize proper lifting techniques, augmented with appropriate mechanical aids to prevent back injuries, includes training for employee lifting techniques, discuss work related risk factors for back injury and provides techniques to identify jobs with risk factors.

63.2 RESPONSIBILITIES

63.2.1 It is the responsibility of each employee to immediately report any unsafe act or condition to a supervisor and for the supervisor to share those reports with the safety director.

63.2.2 Supervisor

63.2.2.1 Ensure implementation of company safety plan on back protection.

63.2.2.2 Ensure adequate funds are available and budgeted for purchase of equipment and supplies to aid in minimizing lifting related back injuries. Manual lifting equipment will be used instead of manual lifting where possible. Enforce the use of lifting equipment.

63.2.2.3 Ensure that the equipment necessary to move loads consistent with the employee capabilities and job requirement is provided and will ensure that the required training is obtained for the affected employees.

63.2.2.4 Ensure that no employee is required to lift beyond his or her capabilities. Upon request, employees are to receive assistance in lifting. Compliance is ensured through the manager's auditing process.

63.2.3 Employee

63.2.3.1 Report any unsafe act associated with this policy as well as any injuries to their supervisors and/or safety director.

63.2.3.2 Practice safe lifting techniques.

63.2.3.3 Immediately report any unsafe act or condition to a supervisor and for the supervisor to share those reports with the safety director.

63.3 RISK FACTORS

63.3.1 Work-related risk factors have been identified from various studies and include:

63.3.1.1 Handling heavy loads

63.3.1.2 Heavy lifting and heavy work

63.3.1.3 Repetitive and frequent lifting

63.3.1.4 Lifting loads near one's strength capacity

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- 63.3.1.5 Occasional very stressful load handling
- 63.3.1.6 Sudden unforeseen events (accidents)
- 63.3.1.7 Extreme postures of the back (twisting, bending, stretching and reaching)
- 63.3.1.8 Prolonged standing or sitting
- 63.3.1.9 Other suspected risk factors, including whole body vibration, pushing, pulling, carrying, twisting and bending
- 63.3.1.10 The employee's physical condition

63.3.2 Additional personal factors that make some individuals more susceptible to back injury are not included in the above list. Those jobs and tasks that have several or many of the above risk factors should receive a higher priority in assessing back injury risk.

63.4 IDENTIFYING JOBS WITH RISK FACTORS

63.4.1 ZARNAS COMPANIES will identify those jobs that involve many of the risk factors and specific lifting tasks for further analysis. Before manual lifting is performed, a hazard assessment will be completed. The assessment must consider size, bulk and weight of the object, if mechanical lifting equipment is required, if multiple workers are required, whether vision is obscured while carrying and the walking surface and path where the object is to be carried.

63.4.2 Once specific lifting tasks are identified and assessed, examine any options that can eliminate or minimize back injuries related to lifting activities. Assess the task for the following options:

- 63.4.2.1 Eliminate the lifting task
- 63.4.2.2 Substitute the task with another, where task elimination is not possible
- 63.4.2.3 Minimize and control the stress level imposed on the back when lifting. If the two previous approaches do not work
- 63.4.2.4 Consider the use of trained and experienced personnel (such as the facilities department or a 3rd party contractor) for the relocation of offices and moving heavy, bulky equipment and furniture.

63.4.3 Supervision must periodically evaluate work areas and employees' work techniques to assess the potential for and prevention of injuries. New operations should be evaluated to engineer out hazards before work processes are implemented.

63.5 PREVENTING BACK INJURIES

63.5.1 The most effective way to prevent back injury is to redesign the work environment and work tasks to reduce lifting hazards.

63.5.2 Use of lifting mechanisms will be enforced by supervisors. Musculoskeletal injuries caused by improper lifting will be investigated and documented. Investigation findings into work procedures will be implemented to prevent future injuries.

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- 63.5.3 Before lifting or carrying a heavy object, assess the situation.
- 63.5.4 Before lifting, size up the load. Test the weight by lifting a corner of the object. If it is too heavy or if the object is an odd shape, stop.
- 63.5.5 If there is any doubt, ask for help. Multiple employees involved in a lift should communicate methods to ensure that one employee is not injured by the actions (or inactions) of another employee involved in the lift.
- 63.5.6 Manual lifting equipment such as dollies, hand trucks, carts, hoists are provided. Where a mechanical lifting device is not practical or possible, two man lifts must be performed. Other engineering controls such as conveyors, lift tables and work station design should be considered.
- 63.5.7 Consider using gloves that will improve your grip and protect your hands.
- 63.5.8 Never lift anything unless you are sure that you can do it safely using proper lifting techniques.
- 63.5.9 Avoid overloading.
- 63.5.10 Stretch out or warm up your back to increase circulation.
- 63.5.11 When lifting always keep your back straight or slightly arched. Let your legs do the lifting. Follow these procedures for proper lifting:
 - 63.5.11.1 Start by placing your feet close to the load. Get a firm footing.
 - 63.5.11.2 Center your body over your feet.
 - 63.5.11.3 Tighten your stomach muscles.
 - 63.5.11.4 Squat and bend at the knees and keep back straight or slightly arched.
 - 63.5.11.5 Grasp the load securely with your hands, and pull the load close to you. The farther the load is from your body the heavier it is.
 - 63.5.11.6 Smoothly lift straight up. Never twist your body while lifting, keeping your head up.
 - 63.5.11.7 Look straight ahead, not down while lifting.
 - 63.5.11.8 Always lift with your legs, your leg muscles are powerful; the muscle bundles in the legs are each 8 to 10 inches or more in diameter, compared with the very thin $\frac{1}{4}$ - $\frac{1}{2}$ inch layer of muscles along the back.
- 63.5.12 When carrying the load:
 - 63.5.12.1 Keep your backs straight or slightly arched.
 - 63.5.12.2 Walk slowly and surely.

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63.5.12.3 Shift your feet to change directions. Never twist your back. Twisting actions puts a grinding, compressive weight on the cartilage in the spine, repeated frequently enough, the action can cause cartilage failure.

63.5.12.4 Avoid leaning forward or backwards.

63.5.12.5 Avoid lifting over your head.

63.5.12.6 If you become tired, set the load down and rest for a few moments.

63.5.13 Setting down the load is the reverse of lifting the load and should be performed as follows:

63.5.13.1 Position yourself where you want the load.

63.5.13.2 Squat down, let your legs do the work.

63.5.13.3 Remember not to twist your body while setting down a load, and keep your head up.

63.5.13.4 Once the load is where you want it, release your grip. Never release your grip until the load is secure.

63.5.14 When using a hand truck or push cart, remember:

63.5.14.1 It is easier and safer to push than to pull.

63.5.14.2 Stay close to the load, try not to lean over, keep your back straight or slightly arched.

63.5.14.3 Use both hands to control the hand truck or cart.

63.5.14.4 Use tie-downs, if necessary, to secure the load.

63.5.14.5 Avoid stairs and inclines. Use the freight elevator if available.

63.5.15 Always use a forklift if an object is too heavy to lift or carry with a hand truck. Never attempt to operate a forklift or other equipment unless you have been trained and authorized by ZARNAS COMPANIES to do so.

63.6 ERGONOMICS

63.6.1 Ergonomics is the interaction between employees and the objects in their work environment.

63.6.2 Evaluate jobs that require frequent lifting, twisting, bent postures or pushing or pulling.

63.6.3 Redesign workstations and tasks so that:

63.6.3.1 The load is close to the body.

63.6.3.2 The load is between shoulder and knuckle height.

63.6.3.3 Twisting lifts are eliminated.

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- 63.6.3.4 Gravity moves the load when possible.
- 63.6.3.5 Slides, hoists, hydraulic lifts and hand trucks are used to move heavy loads.
- 63.6.3.6 Weight is reduced to the lowest level.
- 63.6.3.7 There is sufficient workspace for proper lifting techniques.
- 63.6.3.8 Seated workers have adjustable swivel chairs with back support.
- 63.6.3.9 Bending at the waist or back is minimal.
- 63.6.4 An effective medical management program for back injuries is an essential part of an ergonomic plan. Medical management will allow for early detection of injuries so that they can be treated before they become more serious. It will also prevent future problems from developing. The medical management program should address the following:
 - 63.6.4.1 Injury and illness recordkeeping
 - 63.6.4.2 Early recognition and reporting
 - 63.6.4.3 Systematic evaluation and referral
 - 63.6.4.4 Conservative treatment
 - 63.6.4.5 Conservative return to work
 - 63.6.4.6 Systematic monitoring
 - 63.6.4.7 Training in which employees are instructed how and when to report injuries

63.7 MEDICAL MANGEMENT

- 63.7.1 ZARNAS COMPANIES encourages all employees to immediately report any symptoms of discomfort that may be associated with their job duties. In most cases, employees are to report to their immediate supervisor. Those supervisors are responsible to recommend alternative work or medical evaluation for injured or ill employees.
- 63.7.2 The safety director will record and file written reports from the first observation of injury through all subsequent follow up activities. They are also responsible to forward information about the worker injury or illness to HR.
- 63.7.3 Every work procedure that causes a worker injury or illness will be investigated and reported. This documentation provides vital information for the identification of job related risk factors so that the problems can be corrected before other injuries occur.
- 63.7.4 After an injured employee has been treated by the health care provider, ZARNAS COMPANIES will monitor the recovery process and their return to work.

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63.7.5 The safety director has a list of light and restricted duty jobs which have low musculoskeletal risks. This list is a valuable resource for assigning duties to recovering employees until they can resume their normal job functions.

63.7.6 After verification of an employee's job related injury or illness, the safety director will review this plan and re-evaluate the worksite to determine if additional practices, procedures or redesign of the station could be implemented to prevent similar injuries.

63.8 TRAINING

63.8.1 ZARNAS COMPANIES's management receive copies of this written program. ZARNAS COMPANIES will train each employee who works a job with exposure to specific risk factors and each employee in a job where a work related musculoskeletal disorder has been recorded.

63.8.2 These are the ergonomic elements we teach to all employees:

63.8.2.1 How to recognize workplace risk factors associated with work-related musculoskeletal disorders and the ways to reduce exposure to those risk factors.

63.8.2.2 Signs and symptoms of work related musculoskeletal disorders, the importance of early reporting and medical management procedures.

63.8.2.3 Reporting procedures and the person to whom the employee is to report workplace risk factors and work related musculoskeletal disorders.

63.8.2.4 ZARNAS COMPANIES addresses and controls workplace risk factors by training workers on their role in the process and how to participate in the process.

63.8.2.5 Opportunity to practice and demonstrate proper use of implemented control measures and safe work methods which apply to the job.

63.8.3 Each employee involved in job analysis will be trained in job analysis methods, especially as they relate to identifying workplace risk factors and evaluation and implementation of control measures.