TAMPA ELECTRIC COMPANY

Last Update
January 2016

SAFE WORK PRACTICES

Energy Supply
Foreword

At Tampa Electric, we believe no business interest shall outweigh the health and safety of employees and that our workplace should be one where no one gets hurt. This manual of safe work practices is one way to help ensure that. It has been prepared to inform and guide employees and contractors to prevent injuries and accidents as well as an aid to safeguard employees, contractors and company property.

Before and while performing work for Tampa Electric we expect each employee to become thoroughly familiar with the contents of this manual and observe all rules that apply to your work. In addition, there are departmental procedures and other program requirements that you must follow.

Training is the most important aspect in accomplishing safety and efficiency on the job. Annual in-person training will be provided to ensure that all employees remain familiar with the contents of this manual, departmental procedures and other program requirements. Training for contractor safety expectations will follow a similar format before any contractor is permitted to work on company property or equipment. Management will promote and support these training activities so that our employees and contractors develop and maintain the skills necessary to continue as a safe and efficient workforce.

This manual covers common conditions and situations. When emergency situations arise that aren't addressed by normal procedures or requirements, we expect you to exercise your best judgment, consistent with safety of life. If you are in doubt about what to do, consult your supervisor.

As part of our strong culture of safety, we recognize that every worker has the right to:
- Refuse to do work they consider to be unsafe
- Understand the work
- Be and feel fully trained

While we provide reliable power to the communities who count on us, we make safety our number one priority.

Thank you for the work you do every day for Tampa Electric, and for performing it safely.

Nancy Tower
President and Chief Executive Officer
Tampa Electric

Doug Bowden
Business Agent and Financial Secretary
International Brotherhood of Electrical Workers

01/16/2018
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1. **GENERAL**

1.1. Safety of life shall outweigh all other considerations.

1.2. The use of the word "shall" indicates a mandatory practice. The word "should" indicates an advisory practice.

1.3. It is the responsibility of Tampa Electric Company to provide a safe and healthy work environment for all employees and assure that employees have the knowledge, skills, and equipment to perform their jobs safely.

1.4. These rules shall be strictly adhered to. Negligence, carelessness or unsafe work practices shall not be tolerated. It is not practical to describe in detail all safe work practices necessary for the safe operation of the Company.

1.5. No work is ever to be considered so important or urgent that the necessary steps cannot be taken to do it safely.

1.6. Each employee shall assume responsibility for his or her own safety. This responsibility increases with experience. Each employee shall be required to know and use the protection required for his or her job and shall be familiar with the tools and equipment required.

1.7. All employees are responsible for seeing that all applicable safe work practices are followed in the performance of the job. Each employee has the additional responsibility of assisting in the safeguarding of others.

1.8. An employee shall not use intoxicants or drugs while on duty, report for duty while under the influence of intoxicants or drugs, or relieved by another employee known to be under the influence of intoxicants or drugs. If an employee's physician has prescribed drugs or
medication that will limit the employee’s ability to perform certain jobs, the employee shall inform the supervisor of that fact. Refer to Tampa Electric Drug and Alcohol Policy.

1.9. Each employee shall challenge any carelessness or unsafe work practices and, if the employee believes it necessary in the interest of safety, shall advise the person in charge.

1.10. Where advisory or discretionary judgments are undertaken, adequate measures shall be taken to ensure an equivalent level of accident prevention.

1.11. Interpretations and assistance with Safe Work Practices is available from supervisors and from departmental safety staff. Please refer to applicable work procedures or programs for specific details and additional information.

1.12. An employee shall not open or close a valve or start or stop any equipment unless such action is a regular part of the employee's assigned duties.

1.13. An employee shall not strike heaters, valves, piping or other apparatus under pressure.

2. **BLASTING**

2.1. Abrasive Blasting will only be performed by qualified individuals following all applicable regulations.

2.2. Hydroblasting (High Pressure Water Blasting not including pressure washers) will only be performed by qualified contractors following all applicable regulations.

2.3. De-slragging will only be performed by qualified individuals following all applicable regulations.

Refer to Energy Supply’s location-specific Procedure for Deslagging Boiler.

3. **BLOODBORNE PATHOGENS PROGRAM**

Anyone who may have exposure to blood or other potentially infectious materials shall follow the procedures outlined in the Energy Supply Bloodborne Pathogens Program.

4. **BOILERS**

4.1. General

   a. Boiler entry shall be under the provisions of the Energy Supply Confined Space Program, as well as the Energy Supply Hazardous Energy Control Lockout Program.

   b. When lighting any type of burner, personnel shall stand clear of the furnace opening until combustion has been established.

   c. An approved full-face shield shall be used when looking at the flame in the furnace through an open port.

   d. Boiler safety valves shall be tested and adjusted only in accordance with departmental procedures.
e. Boiler safety valves shall not be gagged while the boiler is under pressure except during testing.

f. Slag tap holes shall be covered with appropriate material when work is to be done requiring employees to be on the furnace floor.

g. When washing down the inside of a boiler, appropriate face and eye protection, monogoggles, rubber boots, rainsuit, work gloves and hard hat shall be worn.

h. When washing down the inside of a boiler and the lighting system is subject to getting wet, only the 12-volt, low voltage lighting system shall be used.

i. Air supplied respirators shall be used when cutting iron deposits on the furnace floor with a burning bar. Refer to Energy Supply Respiratory Protection Program.

j. When stud welding, approved shaded safety glasses shall be worn in conjunction with a face shield.

k. No one shall be allowed to be in a boiler while the tubes are under pressure until the supervisor gives approval to enter.

l. No one shall be allowed to work on boiler tubes while they are under pressure.

m. When mixing or applying any type of refractory, employees shall wear neoprene gloves and long-sleeve shirt, in addition to safety glasses and hard hat. When removing refractory, appropriate respiratory protection shall be used.

n. Before entering a lower boiler furnace to perform work, buildups of ash shall be knocked down from the top to make the job as safe as practical.

o. When removing ash buildup in the boiler, all access doors in the lower portion of the boiler shall be barricaded.

p. Air power supply lines and electric power supply cables to sky climbers shall be brought into the boiler from the top of the boiler when practical. Suspended scaffolds shall be positioned above ash buildups, or at least even with them, before attempting to remove the buildups.

q. Excess air line and electric supply cable slack shall also be pulled up above the buildup where practical. All scaffolds shall be above buildup.

r. When removing ash buildup, using explosives or other methods, plant procedures shall be followed.

s. 100% fall protection is required at all times in boilers. Refer to location specific procedures.

4.2. Air Preheater

a. Air preheater inspections shall be under the provisions of the Energy Supply Confined Space Program.
b. While washing air preheaters or induced draft ducts with hoses, employees shall wear appropriate face and eye protection, rainsuit, rubber boots, work gloves and hard hat.

c. While working on the air preheater, air to the motor shall be shut OFF and the brakes set, or a binding device installed.

d. Signals to rotate the air preheater shall be made orally if possible. When other signals have to be used, they shall be thoroughly understood by all persons involved.

e. Work gloves shall be used while working inside an air preheater.

f. While welding on a rotating element it shall be properly grounded.

g. 12-volt lighting shall be used in air preheaters in wet conditions.

h. During air preheater wash, all entry doors shall be barricaded.

4.3. Chemical Cleaning

a. Areas where chemical cleaning is in progress shall be barricaded to restrict access during chemical cleaning.

b. Signs shall be posted restricting entry to the regulated area and warning of the hazards of fire, chemical exposure or explosion.

c. Smoking, welding, and other possible ignition sources shall be prohibited within the restricted area.

d. The number of personnel in the restricted area shall be limited to those necessary to accomplish the job safely.

e. There shall be ready access to potable water or eye wash and safety showers for emergency use, and they shall be tested prior to starting chemical cleaning.

f. Employees in restricted areas shall wear appropriate personal protective equipment as required.

4.4. Penthouse

a. Before entering the penthouse, the depth and temperature of fly ash shall be checked to determine the presence of hot spots.

b. An approved respirator shall be used when an initial inspection is required, or when work is performed in the penthouse under severe dusty conditions.

4.5. Pulverizers

a. Entry into pulverizers shall be under the provisions of the Energy Supply Confined Space Program.
b. Employees engaged in opening the access door shall stand in the clear, off to one side.

c. The pulverizer shall be purged with fans or air movers before anyone is allowed to enter.

d. Before entering the mill or end boxes, the atmosphere shall be tested to determine the presence of explosive or toxic gases.

e. After hot work is complete, a pulverizer internal inspection shall be conducted.

f. When welding, burning or making repairs internally to the probes, Energy Supply Hot Work Permit procedures shall be followed.

g. An approved fire extinguisher shall be on hand at the access door to the mill when work is being performed in the mill.

h. If it becomes necessary to use water or an approved extinguisher to put out a fire, employees working inside shall get out before attempting to put out the fire.

i. If the crusher dryers are open on a pulverizer, no one shall enter the pulverizer. If the crusher dryers are open, barriers shall be in place while work is ongoing in pulverizer. No one shall enter the pulverizer if work is ongoing in the crusher dryer.

j. Prior to entering the pulverizer, the crusher dryer shall be inspected for loose grid bars or hammers, followed by inspecting the inlet chute for build-up or debris. These two steps shall be conducted in this order to protect personnel from falling hammers/grid bars during the chute inspection.

k. Refer to the Big Bend Single Ended Operating Guidelines on the Big Bend intranet web-page.

4.6. Slag Tanks

a. Slag Tank Work shall be performed in accordance with departmental checklist procedures and Energy Supply Confined Space Program.

b. Before commencing any inspections, operations or repairs in or around the slag tank neck or sealing trough, with the boiler fired, the employee shall verify that fresh air supply fans serving this area are working. If they are not working, portable fans or air movers shall be installed to purge the area. Air monitoring shall be continuous during work.

c. At least two employees shall be present when it is necessary to punch or lance open frozen tap holes or remove abnormal buildup of slag, when a boiler is fired.

d. Face shields shall be worn along with hard hat, safety glasses, and gloves when it is necessary to look through the pressurized lance door with the boiler fired.

e. Before anyone is allowed to enter a slag tank, tests shall be made to determine the presence of hazardous gases. When hazardous gases are detected, forced ventilation shall be maintained as long as anyone is in the slag tank.
The slag tank access or neck access door shall not be opened with a fire in the boiler.

The slag tap hole shall be covered before work is performed in the slag tank.

Refer to the Energy Supply Slag Tank Guideline on the Big Bend intranet web-page.

5. COMPRESSED GAS CYLINDERS:

5.1. General:

a. Cylinders shall:
   i. be stored in an upright position, only in designated areas;
   ii. be secured with chain or wire (minimum #9 baling wire);
   iii. not be secured by valve stem/cap.

b. Storage:
   i. Compressed gas cylinders shall be returned to the main storage area when empty.
   ii. Cylinders shall not be left at job site upon completion of work. Compressed gas cylinders shall be returned to storage at the completion of the job.
   iii. Cylinders shall be stored in well protected, ventilated, dry locations, at least twenty feet from highly combustible materials, and away from egress routes such as stairways and elevators.
   iv. Compressed gas cylinders in storage shall be separated (oxygen from fuel gas) by a five-foot high barrier with a one-hour fire rating or by a distance of 20 feet.
   v. All compressed gas cylinders shall be secured in place during use and storage. Combustible materials shall NOT be used as a means of securing compressed gas cylinders.

c. Cylinders shall not be dropped, struck, rolled in the horizontal position or exposed to temperature extremes.

d. Oil and grease shall not be permitted to come in contact with torches, valves, regulators, gauges or fittings of oxygen cylinders.

e. Sparks or flames shall be kept away from cylinders or hoses. A sign Danger - No Smoking, Open Flames or Ignition Sources shall be posted in rooms or at entrances to areas where fuel gas is stored or used.

f. Oxygen shall be used for purposes intended and not for such purposes as to blow out pipelines, dust clothing, start engines, operate pneumatic tools, operate paint-spraying devices, or to pressurize tanks.
g. Cylinders in use shall be secured to a special cart or secured to a stationary object such as a handrail or column.

h. Compressed gas cylinders shall not be taken into confined spaces for cutting, welding, etc.

i. Cylinders shall be legibly marked as to contents.

j. Acetylene shall not be used at a pressure in excess of 15 psi.

k. Oxygen and fuel gas systems shall be equipped with UL or FM approved flash arresters (check valves, flashback arresters, and backflow valves), regulators, and pressure relief devices. The flash arresters must, at a minimum, be installed at the regulator. Additionally, the flash arrester must be installed in the proper direction of flow to ensure proper operation.

l. Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or trade name of the gas.

m. Cylinders shall be kept away from all sources of heat and at least 20 feet from highly combustible materials, or protected by fire-resistant shields.

n. An acetylene cylinder valve shall not be opened more than one and one-half turns of the spindle. This allows ready closing of the valve in an emergency situation.

o. Pressure-reducing regulators shall be used only for the gas and pressures for which they are intended.

p. Gauges on oxygen regulators shall be marked Use No Oil.

q. Compressed gas cylinders, other than those containing breathing air, shall not be taken into confined spaces.

r. Welding gases shall be stored in isolated areas and segregated by type of gas.

s. Damaged or defective cylinders shall not be used; they shall be tagged for return to the compressed gas cylinder supplier.

t. Oxygen cylinders shall be kept free of oil and grease.

u. If a key wrench is required, the wrench shall be in place on the valve of acetylene bottles at all times during use.

v. Torches shall not be left unattended inside of confined spaces.

5.2 Use:

a. The control valve shall be opened only enough to blow out any foreign particles before connecting the appropriate regulator or line to the cylinder.

b. The cylinder valve shall be opened slowly, with the operator positioned behind and
away from the cylinder discharge/regulator.

c. The control valve shall be opened only enough to blow out any foreign particles before connecting the appropriate regulator or line to the cylinder.

d. The cylinder valve shall be opened slowly, with the operator positioned behind and away from the cylinder discharge/regulator.

e. Valve protection caps shall be in place, hand tight, whenever compressed gas cylinders are not in use. Tools shall not be inserted in the cap for the purpose of loosening or tightening the cap. Utmost caution shall be used when removing caps to assure that the valve assembly is not unscrewed along with the cap.

f. Valves shall be kept fully closed whenever the cylinder is not in use, when work is finished, when the cylinders are empty or anytime cylinders are moved.

g. If a key wrench is required, the wrench shall be in place on the valve of acetylene bottles at all times during use.

h. Gauges shall be removed and valve protection caps shall be in place before moving cylinders, except when cylinders are secured in a carrier designed for such use.

i. Valve protection caps shall be in place whenever compressed gas cylinders are not in use.

j. Compressed gas cylinders shall be secured in an upright position at all times, except for short periods when being carried or hoisted. When being hoisted, the cylinders shall be secured in an approved cage or basket.

k. Compressed gas cylinders shall be stored and located to avoid exposure to sparks, hot slag, or flames. When unavoidable, fire resistant shields shall be used.

5.3 Transporting Cylinders:

a. All compressed gas cylinders shall have valve protection caps in place when being transported on elevators.

b. Cylinders shall be capped and secured in the upright position in approved carriers while being transported. Cylinders may not be transported in an enclosed cab. When being hoisted, the cylinders shall be secured in an approved cage or basket.

c. Over-the-road transportation of all compressed gas cylinders shall comply with DOT regulations for hazardous materials shipping papers. Vehicles shall be properly marked (placarded) when transporting cylinders.

6. CONFINED SPACES

Employees shall follow the procedures outlined in the Energy Supply Confined Spaces Program as well as the specific entry procedures for the location involved.
7. **CONVEYORS**
   a. Employees shall cross over or under conveyors only where permanent walkways are installed.
   
b. Employees shall not clean around or work on conveyor rollers while the conveyor is in operation.
   
c. Employees shall not attempt to clear a blocked tripper or conveyor or loosen any material therein except from an established position outside the equipment, unless the equipment is stopped, and properly tagged out.
   
d. Emergency stops shall be operative at all times.

8. **ELECTRIC SAFETY**
   8.1. General
      a. Refer to Energy Supply Electrical Safety Program.

9. **ERGONOMICS**
   9.1. General
      a. Workstations and/or work areas shall be arranged to accommodate a full range of required movements. Ergonomic assessments are available through the Energy Supply Safety Department.
      
b. Machine controls shall be reachable and easily accessible prior to operation.
      
c. Lighting shall be adequate to perform task activities.
      
d. Adequate space shall be available to allow safe lifting of loads using both hands, while facing the load.
      
e. Workspaces and areas shall be arranged to avoid the need for carrying objects overhead and for overreaching.
      
f. An ergonomic hazard may be caused or aggravated by repetitive motions, forceful exertions, vibration, sustained or awkward positioning or mechanical compression of the hand, wrist, arm, back, neck, shoulder and leg over extended periods or from other ergonomic stressors. Ergonomic hazards shall be identified and reported to the Energy Supply Safety Department for assessment.
      
9.2. Lifting and Carrying
   a. When lifting, carrying or lowering objects, approved methods shall be followed. Mechanical aids shall be used whenever possible.
   
b. Approved methods include straight posture, lifting using leg muscles, good footing, and avoiding over-extending and twisting.
c. Loads shall be carried in such a way as to permit a clear view of the path to be followed.

d. When two or more employees are required to lift or pull together as a team, their efforts shall be coordinated. One shall give the signal for the group.

e. When carrying pipes, conduit or other long objects, special care shall be used when rounding corners and entering doorways. Tools should be selected for ergonomic features.

f. Vibration dampening products should be used on vibratory type tools and equipment where applicable.

g. Plan work activities to reduce or eliminate repeated manual lifting where possible.

10. **FIRE PREVENTION**

10.1. AEGIS Insurance Services, Inc. shall be notified when there are impairments (either planned or unplanned) to the fire protection systems at any Energy Supply facility. To report the impairment, stations shall complete the AEGIS Fire Impairment Form, and send to Tom V. Clark, National Property Supervisor by e-mail. The contact information is:

   **E-mail** tomclark@aegislimited.com  
   **Telephone** - (201) 508-2755

The following minimum information shall be provided:

- Location name  
- Location contact and phone number  
- Nature of impairment  
- Time impairment occurred (or will occur)  
- Precautions taken  
- Time of anticipated impairment restoration

Refer to the Plant specific Impairment Procedures or Permits on the Plant specific intranet web-page.

10.2. Refer to the [Energy Supply Hot Work Program](#) for further guidance on fire protection during hot work operations.

10.3. All “No Smoking” signs shall be strictly observed.

10.4. Each employee is responsible for recognizing fire hazards and reporting those hazards. Steps should be taken to eliminate the fire hazards when possible.

10.5. Each employee is responsible for knowing what action to take in case of fire, including whom to notify and where and how to sound available alarms to summon trained personnel.

10.6. Exit routes and doorways shall be kept clear of all obstructions. Exit routes will be designated and posted.
10.7. Oily wastepaper, oily rags and other combustible materials shall be placed in metal containers with self-closing lids or self-extinguishing lids and disposed of daily.

10.8. Open flames or spark-producing tools shall not be used in any area where combustible gas vapors or dust may exist unless proper precautions are taken in accordance with departmental procedures.

10.9. Fire extinguishers that have been discharged, even partially, shall not be placed back in service, but shall be promptly removed to the empty (MT) bin. The discharged extinguisher shall be replaced with a fully charged unit.

10.10. Designated fire hoses and other fire protective equipment shall not be removed from fire stations or used for purposes other than fire fighting or drills.

10.11. Access to fire extinguisher, designated fire hoses and other fire protective equipment shall not be obstructed.

10.12. All extinguishers shall be kept at their designated location on a hanger or in a cabinet when not in use.

10.13. Only fire extinguishers from storage in the warehouse/storeroom areas or designated “spares” storage areas shall be used for hot work fire watch. Designated fire extinguishers located in the plant shall not be removed for hot work fire watch.

10.14. Fire extinguishers shall be provided and maintained at the following locations:

- For each 3000 square feet of a protected building and within 75 feet of uninterrupted travel.
- Within 50 feet of where more than five (5) gallons of flammable or combustible liquids or five (5) pounds of flammable gasses are being used.

10.15. Materials shall not obstruct sprinkler heads. A minimum clearance of 36 inches shall be maintained.

10.16. Flammable/combustible materials shall not be stored in areas used as exits, stairways, or passageways.

11. **FLEET EQUIPMENT MAINTENANCE**

11.1. General

a. Employees shall know and comply with the Energy Supply Hazardous Energy Control Lockout Program.

b. Before working beneath raised hoods, tilted cabs or dump truck bodies, mechanical supports shall be checked to assure proper support.

c. No employee shall work beneath a vehicle or other piece of equipment held by a chain hoist or jack. Such equipment shall be supported by a stand or otherwise blocked or cribbed.

d. Oil drippings shall be cleaned promptly and shall not be allowed to accumulate on floors or work surfaces.
e. Only approved cleaning fluids shall be used on floors, parts, etc.

f. Exhaust fumes shall be vented to the outside if it is necessary to run engines inside a garage.

g. Tools, parts, hoses, etc., shall not be left in walkways where they can cause a tripping hazard.

h. Portable floor fans shall be equipped with a grill or mesh having openings no larger than one-half inch.

i. Hands shall be kept clear of the high-pressure grease gun nozzle when the handle is pulled. Employees shall make sure the top of the grease cylinder gun is securely in place, when filling a cylinder with a pressurized system.

j. Use approved/wet brake wash methods and appropriate personal protective equipment to minimize airborne dust.

k. Manufacturer's safety precautions shall be observed while using brake pressure bleeders.

l. Exercise proper precautions when handling chemicals, including brake fluids.

11.2 Fleets Vehicular and Mobile Equipment Hazardous Energy Control

NOTE: The following procedure applies to all equipment maintained and repaired by Energy Supply - Fleet Services with the exception of the coal field WL-50, the diesel fire pump, and the plant emergency generators, which shall be tagged out using the normal Energy Supply HEC procedures.

a. The authorized employee shall know the type and magnitude of energy sources that the vehicle or mobile equipment utilizes and shall understand the hazards, and the appropriate means to eliminate the hazards.

b. If the vehicle or mobile equipment to be serviced is operating, it shall be shut down using normal shut down procedures (refer to service manual if necessary)

c. Turn off ignition key, and battery circuit key if used, and remove key from switches. Tag the unit with the Mechanical Energy Control DANGER tag on the access to the operator's compartments or on the steering wheel tag with the keys attached.

The tag should be completed as follows:

<table>
<thead>
<tr>
<th>MASTER TAG NO.</th>
<th>Fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL TAG NO.</td>
<td>Work Order #</td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td>Equipment #</td>
</tr>
<tr>
<td>COMMENTS</td>
<td>Reason for being tagged out</td>
</tr>
<tr>
<td>TAGGED BY:</td>
<td>Name of Fleet Services employee &amp; Extension</td>
</tr>
</tbody>
</table>
DATE: Date tag was placed

Leave all other fields on the tag blank.

d. When working on electrical systems, disconnect all battery cables, apply a cable locking device, if necessary, and attach a signed and dated tag.

e. Stored energy in springs, elevated machine members, air, gas, steam, and water pressures, rotating flywheels, hydraulic systems, etc., must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, or mechanically restraining, before work can begin.

f. At no time will any employee other than the one that tagged out the device be allowed to remove the tag and restore the vehicle or mobile equipment to use, unless following specific departmental procedures.

g. After the vehicle or mobile equipment is tagged out, the authorized employee should test the system by trying to activate it through normal procedures (ignition switch, start button, etc.) to assure it is safe to work on. All systems shall be reset to a NEUTRAL or OFF position after the initial test.

h. Termination of Lockout/Tagout

1) After the service and/or maintenance is complete and the equipment is ready to be tested and/or returned to normal operation, it must be inspected for completeness of assembly, the area around the machine or equipment checked to ensure that exposures to hazards or risks are minimal, and that all non-essential items have been removed from the operating area.

2) All equipment guards must be in place and properly adjusted.

3) All affected employees must be notified of the intention to energize and test the machine or equipment. All non-essential personnel will move to a safe location.

4) The authorized employee(s) who applied any lock or tag shall remove all lockout and/or tagout devices and operate the energy isolating devices to restore energy to the machine or equipment in the exact reverse order that they were installed.

5) Do not remove the last lock and/or tag until all hazards have been considered and corrected as needed, and all affected personnel informed.

6) Committee

a. In the event an employee leaves the facility without removing his/her lock from equipment lock from equipment, machinery, or vehicles on which work must continue, all efforts must be made to contact that employee directly to either return to work and remove the lock or tag, or to provide the supervisor or person in charge the necessary information so that work may continue. If an authorized employee who applied the lock or tag device is not available to remove it, and cannot
be contacted, the lock or tag may only be removed under the following procedures:

i. A supervisor and authorized mechanic from the same department as the employee whose lock or tag has been applied shall be assembled at the equipment, machinery, or vehicle.

ii. The supervisor will verify that the authorized employee who applied the device is not available.

iii. The supervisor and authorized mechanic will evaluate the equipment, machinery, or vehicle in question to include the inspection of any energy control device, all affected energy sources, (i.e.: hydraulic, electrical, chemical, pneumatic, thermal, stored energy, etc.) and any other potential hazards that may result from continuing the maintenance and/or repair, or from restarting that piece of equipment, machinery, or vehicle.

b. Make all reasonable effort to notify the original authorized employee that their lock or tag has been removed.

c. Apply as necessary any new locks and/or tags to the equipment.

d. Document the results of this exception procedure.

   i. The names of the supervisor and authorized mechanic from the same department as the employee whose lock or tag has been applied, who were assembled at the equipment, machinery, or vehicle.

   ii. The actions taken by the supervisor to verify that the authorized employee who applied the device is not available.

   iii. Methods by which the supervisor and authorized mechanic evaluated the equipment, machinery, or vehicle, to include the inspection of any energy control device, all affected energy sources, (i.e.: hydraulic, electrical, chemical, pneumatic, thermal, stored energy, etc.) and any other potential hazards that were impacted by continuing the maintenance and/or repair, or from restarting that piece of equipment, machinery, or vehicle.

   iv. The efforts made to notify the original authorized employee that their lock or tag was removed.

11.3. Tires

a. Comply with all manufacturer's specifications and industry instructional materials when changing or servicing tires.

b. If there is known or suspected damage to the wheel, or if the tire has been run at below 80% of its recommended pressure, completely deflate the tire by removing the valve core before removing the wheel/tire from the axle.

c. Only use approved tire tools for dismounting and mounting tires.

d. A tire shall be completely deflated before dismounting from the rim.

e. All tires mounted on two-piece bolted rims, such as forklift tires, shall be fully deflated before removing the tire from the hub.
f. Tires mounted on two-piece bolted rims shall not be inflated to more than 50% of the rated psi prior to mounting on a hub.

g. Bent, broken, or damaged tire rims shall not be used and shall be disposed of properly.

h. Do not weld, heat, or braze any rim parts for any reason.

i. Check the Multi-Piece Rim Matching Chart to see that the rim parts are properly matched. Never use a rim part unless you can positively identify it from the manufacturer’s stamped markings. If it cannot be identified, destroy it.

j. Remove rust, dirt, or corrosion from rim parts. Repaint to extend the life of the part. Approved tire lubricant shall be used to seat the beads of a tubeless tire.

k. Do not use starting fluid, ether, gasoline, or other explosive material to lubricate, seal, or seat the beads of a tubeless tire.

l. Never inflate beyond 5 psi before placing the tire/rim in an approved restraining device (cage).

m. Use a clip-on air chuck with gauge while inside the restraining device (cage). Do not rest or lean any part of the body against the restraining device (cage) during inflation.

n. Never inflate beyond inflation pressure specified on the rim or tire.

o. Inspect proper seating of all parts before removing from restraining device (cage).

p. If a tire must be changed in the field, the vehicle shall be a safe distance from passing traffic. Reflectors, flares, or other warning devices shall be used in addition to a traffic cone taper to alert oncoming traffic.

q. If work is to be done on a vehicle near energized lines, all instructions of a qualified person in charge shall be followed, consistent with safe work practices.

r. Do not use externally installed plugs to permanently repair any over the road vehicles. Internal plug patches shall be used as a permanent repair.

s. "Fix-A-Flat" or other tire chemical inflators shall not be used to repair or re-inflate flat tires.

t. Extreme caution shall be used to avoid sparks or chemical contact when dismounting a tire that has been inflated with a tire chemical inflator.

12. FLYASH

12.1. Prior to entering an area containing an accumulation of ash, a check shall be made for hot spots, and depth of ash shall be determined.

12.2. When accumulations of hot ash are to be cooled or washed out with water, extra precautions shall be exercised to prevent generated steam from contacting employees.
12.3. All floor drain covers shall be kept in place at all times in the fly ash area except during clean up.

12.4. Fly ash spills shall be cleaned up as soon as possible to minimize hazards.

12.5. Entry into fly ash silo shall be under the provisions of the Energy Supply Confined Space, Hazardous Energy Control, and Radiation Safety Programs.

12.6. Nuclear Density Gauges shall be locked closed by the location Radiation Safety Officer or their designated Authorized User prior to entry.

12.7. Appropriate personal protective clothing shall be determined prior to entry, and shall be worn by all entrants.

12.8. When entering the upper section of the silo, filter bag area, or air filter stone area, an approved personal fall arrest system shall be used.

12.9. Prior to entry into the lower section of the fly ash silo, the depth and temperature of the fly ash shall be assessed to determine presence of hot spots.

12.10. Refer to Arsenic Procedure.

13. FUEL OPERATIONS

Refer to section 7 regarding safe work practices around conveyors transporting fuel.

14. GENERATORS

14.1. General

   a. Excessive hydrogen makeup or abnormal loss of pressure shall be considered an emergency and shall be corrected immediately.

   b. Before starting an internal inspection of the generator, the Energy Supply Hazardous Energy Control Lockout or Energy Supply Hazardous Energy Control Tagout and Energy Supply Confined Space Programs shall be applied prior to entry.

   c. Instruments used to detect gas leaks shall only be used by trained and qualified personnel.

   d. The hydrogen and carbon dioxide supply spool pieces shall be removed and tagged prior to entry into the generator as specified in the Hydrogen Spool Piece Removal Procedure found on the plant specific intranet web-page.

   e. Oil leaks on the hydrogen seal oil system shall be reported and corrected immediately.

   f. Barricade tape and tags shall indicate the approximate location of the hydrogen leak, and state “Hydrogen leak, no smoking, flames or ignition sources”.

   g. Smoking is prohibited within 35 feet of hydrogen and hydrogen sealing systems.
h. When adding hydrogen, purging or putting a new charge of hydrogen into the generator, employees shall follow the manufacturer's procedures. (Refer to equipment-specific procedures).

1. Refer to the Big Bend Purging Guidelines on the Big Bend intranet webpage for additional information on generator purging requirements.

i. Hot Work Permits process must be followed for hot work activities within 35 feet of hydrogen and hydrogen systems.

j. When working on a hydrogen system that has not been purged, non-ferrous (non-sparking) tools shall be used.

k. Before a generator or exciter is meggered or high-voltage tested, the manufacturer's procedure shall be adhered to and all plant personnel shall be notified by use of the plant PA system.

l. Consult 17.15 for additional guidance regarding Hydrogen.

14.2. Exciters

a. Those working in the rotating exciter enclosure when the equipment is energized:

1). Shall not wear loose clothing, wristwatches or other metallic jewelry or accessories.

2). Shall not have metal objects or any loose articles in pockets.

3). Shall wear a long sleeve flame-retardant shirt.

b. Only authorized persons shall be allowed inside.

14.3. Inspecting and Changing Generator and Exciter Brushes

a. Only qualified persons familiar with the construction and operation of the collector (or commutator) and brush rigging and the hazards associated with them shall perform brush maintenance activities.

b. Before brushes are changed while the generator is in service, the field shall be checked, in accordance with the unit-specific operating instructions, to determine whether a ground condition exists.

c. Brushes shall not be changed while the generator is energized if a ground condition exists.

d. When changing brushes while the unit is energized, Class 0 dielectric gloves and rubber glove protectors shall be worn.

e. When changing brushes, the work area shall be protected from unauthorized entry.

15. GOLF CARTS

15.1. Operators of golf carts shall:
a. Conduct a pre-shift inspection.
b. Comply with all traffic signs and directions.
c. Drive the vehicle only as fast as terrain and safety considerations allow. Consider the terrain and existing traffic conditions.
d. Avoid sudden stops or change of direction as they may result in a loss of control.
e. Travel should be directly up or down hills.
f. Use extra care when driving the vehicle across an incline.
g. Keep feet, legs, hands, and arms inside the vehicle at all times.
h. Check the area behind the vehicle before backing up.
i. Not exceed vehicle passenger capacity. Passengers are only allowed to ride on the seat. Standard vehicle is limited to two occupants.
j. Balance and secure loads before driving. Keep items within the perimeter of the cart. Stay within the weight limits of the cart.
k. Drive golf carts on Company property only. Do not drive carts on public roads, unless as dictated by plant policy.
l. Golf carts may be driven across/along public roads so long as the sole purpose of said driving is pertaining directly to the duties of the operator.
m. The road to be crossed, shall be crossed at a 90 degree angle (+/-3 degrees).
n. The route taken shall be the most expeditious with regards to minimizing travel on or along said roads.
o. Travel along the roads shall, to the greatest extent possible, be with the direction of travel of the adjoining lane.
p. A minimum distance of two feet, six inches shall be maintained between the cart and the side of the road during travel, whenever possible.
q. Due care shall be taken to cross the road only when ample space from oncoming traffic (both directions) is presented.
r. Operators (drivers) of the carts shall have a valid, up-to-date driver’s license, issued by the state of Florida (Other state licenses may be utilized with written permission from the station Safety Coordinator).
s. Energy Supply’s utilization of the public roads in this manner has been re-affirmed with the Hillsborough Sheriffs’ Department (10/31/02).

15.2. Golf Cart Battery Charging

Refer to Batteries section for further information.
a. Wear eye protection whenever working with the battery. Use extra care when working around the battery and charging equipment.

b. Charging shall be performed in a well-ventilated area.

c. Inspect the charger AC and DC plugs for loose, bent, arced or dirty contacts. Inspect the vehicle receptacle for loose wires or damage. Tag out-of-service any damaged cords or parts.

d. Insert plug fully into receptacle and check that the connection is tight.

e. Be careful not to pull on the cord or place it in a position where it can be driven over or present a hazard to personnel working in the area.

f. When connecting or disconnecting the charger to a vehicle, always make sure that the charger has completed its charge and is OFF (ammeter indicates 0 amps). If the charger is not OFF, an electrical arc may occur when the charger is unplugged and may cause an explosion or fire.

16. HAZARDOUS ENERGY CONTROL

Refer to Energy Supply Hazardous Energy Control Lockout Program or Energy Supply Hazardous Energy Control Tagout Program.

17. HAZARDOUS MATERIALS

17.1. General

a. Energy Supply employees are responsible for reading and understanding the Energy Supply Hazard Communication Program to include Safety Data Sheets (SDS) and product warning labels for the products and substances with which they are working. Energy Supply SDS’s are available online on the Energy Supply intranet site.

b. Hazardous materials, chemicals and products shall receive approval for use by evaluation through the Energy Supply Hazard Communication Program.

c. Only qualified and authorized employees shall handle hazardous materials.

d. Appropriate personal protective equipment as defined in the SDS shall be worn to reduce exposure to injury and other risks.

e. Practice good personal hygiene to reduce exposure to hazardous substances.

f. Consult with a supervisor or safety staff member if you have any questions about working safely with hazardous substances.

17.2. Hazardous Material Spills

a. Any identified or unfamiliar hazardous material spill or leak should immediately be reported to the supervisor or the location Environmental Coordinator. Employees may respond to a Hazmat spill or leak based upon the level of training they have received.
1). Hazmat Awareness: Employee has received less than 8 hours of hazmat training. Employee is trained to identify a release and notify appropriate personnel. Employee may not respond to the release.

2). Hazmat Operations: Employee has received 8 hours initial and annual training, and may identify release, may call for assistance, but, may not respond to the release.

3). Hazmat Technician: Employee has received 24 hours initial and 8 hours annual training. Employee may identify release, and may don PPE to mitigate the release.

4). Hazwoper Level: Employee has received 40 hours initial and 8 hours annual hazmat training. Employee may identify release, may don PPE to mitigate the release, and may perform clean up duties associated with release.

b. The area of a hazmat release shall be restricted only to those that are required and who meet all safety and occupational health requirements.

17.3. Acids and Caustics

a. Employees shall wear chemical monogoggles when handling any chemicals. When handling acids and caustics, a face shield, chemical monogoggles, neoprene gloves, apron and a long sleeve shirt shall be minimum protection.

b. When loading or unloading acids or caustics from tank trucks, barricades and warning signs shall be used to warn employees of hazardous conditions.

c. Monogoggles, face shield, protective suit and gloves, shall be worn when working in acid and caustic pump rooms.

d. Before employees enter an acid or caustic pump room, they shall know where the emergency acid suits are located and test the eye wash station and safety shower.

e. Chemical storage tanks shall be entered under the provisions of the Energy Supply Confined Space Program.

f. Acid or caustic lines and pumps shall be properly drained, flushed and tagged prior to maintenance. Flanges and lines shall be separated with extreme caution.

17.4. Ammonia

(Under development).

17.5. Arsenic

a. Personnel who work on or near syngas power blocks, boiler components, pollution control devices and duct work where coal combustion by-products are present may be exposed to fly ash and bottom ash (boiler tube slag).

b. Fly ash and bottom ash contain trace amounts (less than 0.1%) of inorganic metals which may be regulated under specific OSHA standards.
c. Tampa Electric has identified the potential for personnel exposure to inorganic arsenic in excess of the OSHA established Permissible Exposure Limit (PEL) of 10 micrograms of arsenic per cubic meter of air averaged over an eight hour period (10ug/M3 as an 8-hour TWA).

17.6. Inorganic Arsenic Notice

a. Personnel who work on or near syngas power blocks, boiler components, pollution control devices and duct work where coal combustion by-products are present may be exposed to fly ash and bottom ash (boiler tube slag). Fly ash and bottom ash contain trace amounts (less than 0.1%) of inorganic metals which may be regulated under specific OSHA standards.

b. General Notice

Tampa Electric has identified the potential for personal exposure to inorganic arsenic in excess of the OSHA established Permissible Exposure Limit (PEL) of 10 micrograms of arsenic per cubic meter of air averaged over an eight hour period (10ug/M3 as an 8-hour TWA). Work activities and work environments covered by this notice are identified in the following section entitled “Scope”.

c. Scope

The following requirements apply to work activities that disturb ash or otherwise cause airborne emissions when performed on interior surfaces of coal-fired boilers and their connecting facility components (from boiler bottom ash hoppers up to and including precipitators), where ash deposits and/or ash corrosion film (a result of liquid phase corrosion) are present. This scope applies to the syngas power block at Polk Power Plant also.

1) These work activities include:

Mechanical operations such as, but are not limited to, grinding, chipping, cutting, milling, vacuuming, abrasive blasting, etc.

• Thermal operations such as, but are not limited to, welding, torching, arc gouging, lancing, etc., and

• Work activities performed in ash laden work environments where there is heavy airborne ash concentration such as, but are not limited to, precipitators, economizer, ductwork, back passes, etc.

2) These requirements do not apply to the following conditions:

• Work activities where there is not an active process that produces airborne emissions.

• Work activities where all of the ash deposits and/or ash corrosion film has been previously removed, and

• Work activities on new surfaces/components that are free of ash deposits and/or ash corrosion film.
d. Employee Exposure Assessments:

Tampa Electric must conduct initial employee exposure assessments for work activities covered by the scope of these requirements. The exposure assessments must be representative of the work activities and work environment for the project. Historical data may be used if the data is representative of the planned work activities and work environment. All personal exposure assessments must be made by using standard industrial hygiene protocols for conducting personal monitoring. Analysis of air monitoring must be conducted by an AIHA Accredited lab for performing analysis using National Institute of Occupational Safety and Health Analytical Method 7300 for arsenic.

If initial exposure assessments for covered work activities are not performed, and when historical data is not used, the employer must assume that the exposures are above the OSHA permissible exposure limit (PEL) for inorganic arsenic and must comply with all provisions of the OSHA Inorganic Arsenic Standard 29 CFR 1910.1018.

e. Minimum Level of Protection During the Assessment Period:

Employers are required to provide at a minimum, the following level of protection during the assessment period:

- Half-mask air-purifying respirator with HEPA filtration, and
- Protective work clothing.

f. Receipt of Air Monitoring Results:

1). Upon receipt of air monitoring results, the contractor will determine if the monitored work activity is below the OSHA PEL for arsenic. If the results are below the OSHA PEL, Tampa Electric may discontinue the use of the PPE specific for arsenic. If the results are above the OSHA PEL, the contractor shall take steps to reduce the exposure levels to below the PEL, through engineering and/or work practice controls, such as local exhaust ventilation, general dilution ventilation, and work positioning, etc. The employer shall also comply with all of the PEL-driven requirements of the OSHA regulation.

2). The employer shall ensure that all contractor work operations and work environments are evaluated, and when necessary, take the appropriate measures to protect its employees from the hazards associated with inorganic arsenic and to comply with all regulatory requirements.

17.7. Asbestos

Refer to Energy Supply Asbestos Program.

17.8. Batteries

a. For additional information, refer to manufacturers’ product information and Material Safety Data Sheet (SDS).
b. Ventilation shall be provided in battery and battery-charging areas. Where natural ventilation does not adequately exchange the air, forced ventilation shall be used.

c. The manufacturers' recommendations shall be followed in charging batteries.

d. Approved signs shall be posted and observed in all battery areas. Signs shall read Danger-No Smoking, Open Flames or Ignition Sources.

e. Approved eye wash & safety shower facilities shall be immediately available to the battery charging area and clearly identified.

f. Employees shall wear acid-proof gloves, aprons, chemical monogoggles and face shield when handling or repairing batteries.

g. Care shall be exercised to prevent short-circuiting, generating a spark or ignition source when working on or near the battery or when cleaning or making repairs.

h. When making up electrolyte for batteries, employees shall always pour the acid slowly into the water, not water into the acid. The wrong procedure can cause an explosion.

i. A carboy tilter or siphon shall be used to handle electrolyte.

j. If electrolyte is spilled on clothing, the contaminated clothing shall be removed and the skin washed with water as soon as possible.

k. Open flames, tools that can cause sparks, and other sources of ignition shall be kept clear of the immediate area (no closer than 35’) during charging operations. Energy Supply Hot Work Program shall be followed at all times when necessary to introduce a source of ignition in a battery charge area.

l. When it is necessary to work on a battery, in battery rooms where sources of ignition exist, the room shall be adequately ventilated and the battery charger shall be turned OFF.

m. Battery-powered vehicles shall be properly positioned and brakes set before charging operations commence.

n. When charging batteries, vent caps shall be kept in place. Ensure that vent caps are in good condition, and clear of all obstructions. Battery compartment covers shall be opened to dissipate heat and vapors.

o. Prevent grounding the case of a NiCad cell, since the case is part of an electrical circuit.

p. When removing a battery, the ground connection shall be the first connection removed. When installing a battery, the ground connection should be the last connection made.

q. When using a hydrometer to check batteries, splashing battery acid shall be prevented, and monogoggles and face shield shall be worn as minimum eye and face protection.
r. If jumpers are used to start vehicles with dead batteries, the jumper shall be connected first to the positive terminal of the dead battery, then to the positive terminal of the live battery. The other jumper shall be connected first to the negative terminal of the live battery and then to a suitable ground and not the negative terminal of the dead battery.

s. Rooms and cages housing exposed electrical bus above 60 volts shall be locked and access limited to authorized personnel.

t. Batteries shall be properly disposed of in an environmentally safe manner. Lithium batteries shall be collected and disposed of in accordance with hazardous waste procedures. NiCad and alkaline batteries shall be placed in a separate collection receptacle designated for spent dry cell batteries. These collection receptacles shall be in an area of good general ventilation away from ignition sources.

17.9. Compressed Gas Cylinders

See Section 5 of the Safe Work Practices.

17.10. CRYOGENICS

(Under Development)

17.11. Flammable and Combustible Liquids and Gases

a. All No Smoking signs shall be strictly observed. No open flames shall be allowed or spark-producing tools used within 35 feet of the area where flammable or combustible liquids and gases are stored.

b. Flammable and combustible liquids shall be handled, used and transported only in approved, properly labeled, safety containers. When not in use, flammable and combustible liquids shall be kept in properly labeled storage cabinets.

c. Containers being transported shall be properly secured.

d. Safety cans containing flammable liquids shall be marked with a yellow stripe around the can, and the contents clearly identified.

e. Flammable hazard or combustible waste liquid shall be disposed of only into approved waste containers. Waste shall never be emptied into any drain.

f. When pouring flammable liquid from one container to another, or in filling gasoline tanks, contact shall be maintained between the two containers or between the hose nozzle and the tank to prevent static buildup.

g. Bulk containers used to dispense flammable liquids into another container shall be bonded to the receiving vessel and to ground to prevent static spark.

h. Place containers on the ground when filling with flammable liquid instead of in the back of a truck with a bed liner to prevent static buildup.

i. Dispensing drums shall be equipped with self-closing spigots. Pipe connections on all drums and piped flammable liquids shall be vapor and liquid-tight.
j. Leaking hoses and nozzles shall be repaired immediately.

k. All spills of gasoline, oil or other flammable liquids shall be cleaned up immediately in compliance with all regulatory requirements.

l. The cutoff switch for electric pumps used to dispense flammable liquids shall be clearly identified and easily accessible.

m. Smoking is prohibited at fuel depots and when refueling activities are in progress. Clear and legible signs shall be posted.

n. No equipment shall be fueled while the engine is running.

o. Fuel lines shall be equipped with valves capable of stopping the flow of fuel at the source and shall be located and maintained to minimize fire hazards.

17.12. Fyrquel

Refer to the station-specific spill response and cleanup procedures.

a. Big Bend Station Fyrquel Spill Response and Cleanup Procedure

b. Polk Power Station Fyrquel Spill Response and Cleanup Procedure

17.13. Gas Service

Note: This section applies to propane or natural gas systems.

a. Smoking and open flames are prohibited when working on gas service installations.

b. Prior to beginning work, visually inspect the gas service installation for hazards.

c. Appropriate personal protective equipment (hard hat, safety eyewear, protective footwear, gloves, etc.) shall be worn as required by the work conditions and task to be performed.

17.14. L P Gas Operations

Refer to Flammable and Combustible Liquids and Gases.

a. Only qualified employees shall fuel liquefied petroleum (LP) gas-powered vehicles.

b. Employees shall follow, in prescribed order, all procedures in fueling LP gas-powered vehicles and LP operations.

c. Employees fueling LP-powered vehicles shall wear approved personal protective equipment.

d. The main fuel line valve shall be shut OFF in LP gas-powered vehicles left in buildings overnight.

e. Employees shall not vent LP gas fuel tanks inside buildings.
17.15. Hydrogen

a. Energy Supply Hazardous Energy Control Lockout Program or Energy Supply Hazardous Energy Control Tagout Program shall be followed at all times.

b. Generator manufacturer instructions shall be followed.

c. General safe work practices in the utilization of hydrogen include:

1). Intermixing of hydrogen and air must be avoided. Mixtures of hydrogen and air between 4% and 74%, at atmospheric pressure, can be explosive.

2). Any possible source of ignition in the immediate area of hydrogen must be eliminated.

3). Grounding clamps shall be used when filling the hydrogen silo.

4). In order to help ensure that there is very little intermixing of hydrogen and air in the generator casing, it is necessary to introduce an inert gas in the filling and purging processes. Carbon dioxide is usually used for this purpose.

5). The general procedure and sequence of events in filling the generator with hydrogen is the following: (procedures specific to each unit and each location shall be followed):

   a) Test the generator for air leaks.

   b) Displace the air in the generator casing, piping, and instrumentation, with CO2.

   c) Displace the CO2 with hydrogen.

   d) Add hydrogen to increase the system pressure to the desired operating pressure.

6). The general procedure for purging, or removal of hydrogen from the casing, is: (procedures specific to each unit and each location shall be followed):

   a) The hydrogen is vented to the outside air until the casing pressure is reduced to atmospheric pressure.

   b) CO2 is injected to force the remaining hydrogen out.

   c) The CO2 is vented to the outside air.

   d) Dry air is used to force the CO2 out before any covers are removed or pipes opened.

7). At each step of the filling and purging cycle, the purity of the contained gas is measure and evaluated to assure that it is safe to proceed to the next step.

8). For specific guidance regarding work on the generators, see Section 14.1.
17.16. Paint and Paint Storage

a. All OSHA and NFPA standards shall be followed in the storage of flammable and combustible materials.

b. Review Safety Data Sheets and follow recommendations for personal protective equipment, storage and handling practices.

c. When painting with a brush, on or near energized parts at 600 volts or above, the brush shall be attached to an approved insulated handle.

d. Adequate ventilation shall be maintained in enclosed areas when painting.

e. Only approved solvents shall be used to clean brushes. The solvent shall be disposed of properly in approved containers in accordance with environmental procedures.

f. Open flames shall not be permitted in the area where painting is being done.

g. Approved PPE shall be worn when handling all chemicals.

h. Air pressure to paint spray guns shall be properly regulated. No handle will be locked open.

i. Oil-base paint, varnishes and paint thinners shall be kept and transported in approved containers.

j. When oil-base paint is kept in the original container, the lid shall be properly sealed so vapors do not escape. When not in use, containers of paint, lacquer, varnish, and thinners shall not be left open.

k. Paint and paint by-products shall be stored in an approved storage area, where there is adequate ventilation and no excessive heat.

l. Pressurized cans of paint, lacquer, etc. shall not be left in direct sunlight or where there is excessive heat. When not in use, pressurized cans with recoverable product shall be stored in an approved storage area. Empty cans and cans with non-recoverable product shall be disposed of properly. They shall not be punctured or placed in a fire.

m. When required, an eyewash fountain and safety shower shall be readily available and in good operational condition.

n. Practice good personal hygiene at all times, including, washing hands thoroughly after handling products and before eating or smoking.

o. Paint waste and empty containers shall be properly disposed of in accordance with departmental procedures and SDS information.

17.17. PCBs-(Polychlorinated Biphenyls)

a. Breathing of PCB vapors shall be avoided. When working with PCBs in enclosed areas, adequate ventilation shall be used to prevent build-up of vapors.
b. Where PCB vapors cannot be completely dispersed, an organic vapor cartridge-type respirator shall be worn.

c. When employees are required to enter confined spaces, (such as a tank) where PCBs are present, self-contained or air-supplied breathing apparatus shall be used.

d. Employees shall avoid skin contact with PCBs. Approved gloves shall be worn for protection when the job requires placing hands in PCB liquid or handling parts or equipment contaminated by PCBs.

e. If skin contact occurs, the skin shall be washed with waterless hand soap and dried with paper towels, especially before eating, smoking, drinking or touching other parts of the body.

f. If there is a possibility of PCBs making contact with employees' clothing, approved protective clothes (apron or disposable coveralls and shoe covers) shall be worn.

g. Approved eye protection shall be worn at any time employees work with or handle PCBs. Minimum eye protection shall consist of safety glasses. If a splashing hazard exists, chemical monogoggles or face shield shall be worn.

h. If there is eye contact with PCBs, the eyes shall be flushed with water for 15 minutes and a physician consulted immediately.

i. Tools and other reusable equipment used to work with PCBs shall be washed with approved solvent and wiped dry upon completion of the job.

j. Upon completion of any job involving PCBs, all contaminated disposable items (ordinary work gloves, rags, paper towels, coveralls, used solvents, etc.) shall be disposed of according to established environmental procedures.

17.18. Radiation

Refer to Energy Supply Radiation Safety Program.

17.19. Solvents

a. Only approved solvents shall be used. Solvents shall receive approval by evaluation through the procedures of the Energy Supply Hazard Communication Program.

b. The SDS and, precautions, appropriate protective equipment and safe work practices shall be strictly followed for each approved solvent.

c. Only approved hand cleaning products shall be used for hand cleaning.

18. HIGH HEAT ENVIRONMENTS

18.1. High heat environments can be hazardous at all Energy Supply locations regardless of ambient temperature conditions.
18.2. Self-determination shall be used to avoid heat related illnesses. Employees shall receive training on recognizing signs and symptoms of heat stress related illnesses. Employees shall monitor their activities so as to avoid heat stress.

18.3 The following is a list of actions that each team member may take to minimize their risk of heat stress:

   a) Drink water frequently. Drink 8 ounces of water every 15 – 20 minutes when working in high heat environments. Thirst is a signal that you are becoming dehydrated.
   b) Wear light-colored loose-fitting, breathable clothing such as cotton.
   c) Be aware that protective clothing or personal protective clothing may increase the risk of heat stress.
   d) Take more breaks in extreme heat and humidity. Take breaks in the shade or a cool area whenever possible.
   e) Avoid drinks with caffeine and large amounts of sugar.
   f) Be aware that personal habits and personal medical conditions can increase susceptibility to heat illness. Eat a well-balanced diet. Avoid alcoholic beverages. Discuss any medications you take or medical conditions with your doctor to determine if you have an increased risk of heat illness.

18.4 Monitor your physical condition and that of your coworkers. Report any signs of heat stress related illnesses to your supervisor and seek medical attention when needed.

18.5 Entry into an OSHA defined enclosed space or OSHA defined confined space is restricted at temperatures above 110°F (Dry Bulb – common thermometer). When dry bulb temperatures are between 110°F and 115°F entry may be made with agreement between craft and management on additional controls and entry parameters to accomplish the required work.

(Note, although there are only restrictions when dry bulb is above 110 self-determination and administrative controls shall still be used when temperatures are less than 110.)

19. HOT WORK

19.1. Workers or other persons adjacent to welding, cutting or any hot work shall be protected from the welding rays, sparks or debris by noncombustible screens, shields and appropriate PPE. All welding, cutting, brazing shall be performed in accordance with the Energy Supply Hot Work Permitting Program.

19.2. Welding, Cutting and Brazing

   a. General Practices

      1). Only those qualified to do so shall be permitted to weld.

      2). Oxygen and fuel gas hoses shall be inspected before use. Hoses which leak or show burned or worn areas shall be removed from service.

      3). A welding helmet/face shield shall be worn to protect the eyes and face when
welding.

4). Safety glasses shall be worn at all times beneath a welding helmet, except where conditions prohibit their use.

5). Those working in the immediate vicinity of welding operations shall wear approved tinted eye protection.

6). Except where engaged in the welding, approved welder's gloves shall be worn. When the welding, approved light-weight gloves may be worn in place of welder's gloves.

7). A long-sleeved shirt or jacket of 100% cotton or other flame resistant fabric shall be worn when welding, cutting or brazing. Clothing made from the following types of fabrics, either alone or in blends, is prohibited: acetate, nylon, polyester, rayon, or silk.

8). Approved hearing protection shall be worn when arc gouging or welding in confined or enclosed spaces.

9). To prevent concrete "popping," work that is to be welded or cut shall not be placed directly on a concrete floor.

10). Welding electrodes shall not be left in holders when not in use.

11). Hot electrodes shall not be dipped in water to cool them off.

12). When arc welding is performed in wet conditions, gloves shall be changed if they become saturated.

13). Fuel-powered welding machines shall be protected from open flames or falling sparks.

14). Good housekeeping practices shall be adhered to, including proper disposal of welding rod stubs.

15). All combustible materials, which can be moved, shall be relocated at least 35 feet from the work area. Combustible materials which cannot be removed from the work area shall be covered with a fire retardant blanket or guards shall be used to confine the heat, sparks and slag, and to protect the immovable fire hazard.

16). Where there are floor openings or cracks in the floor that cannot be closed, precautions shall be taken so that no readily combustible materials below will be exposed to sparks which might drop through the openings. The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.

17). Screens or fire retardant curtains shall be placed around or under welding or cutting operations to protect other employees from welding arcs and hot slag.

18). Any arc welding machine that gets wet internally shall be thoroughly dried and tested by a qualified person before being used.
19). Welding cables shall be inspected periodically for damage and loss of insulation. Cables in need of repair shall not be used.

20). Welding cable shall be uncoiled before use. The ground lead shall be firmly attached to the work. All ground connections shall be checked to be sure that they are mechanically strong and electrically adequate for the required current.

21). Only connectors specifically designed for the purpose shall be used to join ground and electrode cables.

22). A welder should not weld with cables coiled around or placed on his or her body. Repair splices shall not be permitted within ten feet of the welder.

23). Electrode holders, when not in use, shall be so placed that they cannot make electrical contact with persons, conductive objects, fuel or compressed gas tanks.

24). Welding rod studs shall be properly disposed.

25). Employees exposed to the hazards created by welding, cutting or brazing operations shall be protected by proper personal protective equipment. Refer to Energy Supply Personal Protective Equipment Program. Leggings are required when welding with low-quarter shoes. High top shoes may be worn in lieu of leggings as long as the tops of the shoes are close-fitting and covered by the pants leg while welding.

26). Under no conditions shall acetylene be generated, piped or utilized at a pressure in excess of 15 psig (or 30 psig).

27). Welding cable, hoses, and other equipment shall be placed so that they are clear of passageways, stairways and ladders unless properly guarded.

28). Matches, lighters, or hot work shall not be used to light a torch. A friction striker or other approved device shall be used.

29). After welding or cutting is completed, the hot metal shall be marked or other means shall be used to warn others.

30). When welding or cutting in an area where flammable or combustible materials are present a Hot Work Permit shall be obtained.

31). Valves on fuel gas shall not be opened more than 1 ½ turns, and where special wrenches are required for closing the valve, wrench shall be left in position on the stem at all times or until task completion and replacement of caps.

32). Fuel gas hose and oxygen hoses shall be easily distinguishable and shall not be interchangeable.

33). Hoses and torches shall be inspected before use. Defective hoses shall be removed from service.

34). Boxes used to store used fuel gas hoses shall be ventilated.
35). Torches shall be lighted by friction lighters or other approved devices only. Cylinders, all hose apparatus, and connectors shall be kept free of oil and grease, and not handled with oily or greasy hands or gloves.

36). Oxygen and fuel gas systems shall be equipped with UL or FM approved flash arresters (check valves, flashback arresters, backflow valves), regulators, and pressure relief devices. The flash arresters must, at a minimum, be installed at the regulator. Additionally, the flash arrester must be installed in the proper direction of flow to ensure proper operation. All personnel shall utilize the proper personal protective equipment and clothing when performing or assisting in cutting and welding operations (i.e., burning glasses, shields, and gloves).

37). Welding leads and equipment shall be properly maintained and shall be inspected before use. Defective equipment shall not be used and shall be reported to supervision.

38). Pipelines containing flammable liquids or gases, or electrical cables shall not be used as a ground. For welding of natural gas lines, consult DOT standard 49 CFR part 192.

39). The frame of all arc welding or cutting machines shall be effectively grounded when the machine’s power outlets are being used as a power source.

40). If electrode holders are to be left unattended, the electrodes shall be removed and the holder placed or protected from unintentional contact.

41). Welding machines shall be turned off when being moved or if the welder must leave his/her work for any significant length of time.

42). A fire extinguisher of sufficient rating for the scope of the work shall be at the work location during welding, cutting, soldering, etc.

43). Where preservative coatings are present, the coating shall be removed or alternative methods used for a sufficient distance in each direction to prevent appreciable heating of the coating.

44). Welding leads or cords that cross a pathway or roadway shall be protected from damage by underground burial or equally effective means.

45). Welding lead with broken insulation will be taken out of service or repaired. Ground lead may be repaired with tape provided the safe current carrying capacity is not compromised.

19.3. Ventilation

a. Adequate ventilation shall be provided during welding operations or approved respiratory protective equipment shall be used.

b. Oxygen shall not be used for ventilation or to blow debris from clothing or work area.
c. When welding and cutting on fluorine, zinc, beryllium, lead, cadmium, mercury, cleaning compounds, stainless steel, the need for local exhaust ventilation or airline respirators for welding or cutting in other than confined spaces will depend upon the individual circumstances. However, experience has shown such protection to be desirable for fixed-location production welding and for all production welding on stainless steels. Where air samples taken at the welding location indicate that those compounds liberated are below the maximum allowable concentration, such protection is not necessary.

d. Ventilation for general welding and cutting.

1). Mechanical ventilation shall be provided when welding or cutting is done on metals other than fluorine, zinc, beryllium, lead, cadmium, mercury, cleaning compounds, stainless steel, if the following restrictions apply:

a) In a space of less than 10,000 cubic feet (284 m³) per welder.

b) In a room having a ceiling height of less than 16 feet (5 m).

c) In confined spaces or where the welding space contains partitions, balconies, or other structural barriers to the extent that they significantly obstruct cross ventilation.

2). Natural ventilation is considered sufficient for welding and cutting operations where the above (a - c) restrictions do not occur.

3). Such ventilation shall be at the minimum rate of 2,000 cubic feet (57 m³) per minute per welder, except where local exhaust hoods and booths as per (e.) of this section, or airline respirators are provided. Natural ventilation is considered sufficient for welding or cutting operations where the restrictions in paragraph (i) of this section are not present.

e. Local exhaust hoods and booths. Mechanical local exhaust ventilation may be by means of either of the following:

1). Hoods:

a) Freely movable hoods intended to be placed by the welder as near as practicable to the work being welded, and,

b) Provided with a rate of air-flow sufficient to maintain a velocity in the direction of the hood of 100 linear feet (30 m) per minute in the zone of welding when the hood is at its most remote distance from the point of welding.

c) The rates of ventilation required to accomplish this control velocity using a 3-inch (7.6 cm) wide flanged suction opening are shown in the following table:

<table>
<thead>
<tr>
<th>Welding Zone</th>
<th>Minimum air flow (1) cubic feet/minutes</th>
<th>Duct diameter, inches (2)</th>
</tr>
</thead>
</table>


<table>
<thead>
<tr>
<th>Distance from Arc or Torch</th>
<th>Velocity</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 to 6 inches</td>
<td>150</td>
<td>3</td>
</tr>
<tr>
<td>6 to 8 inches</td>
<td>275</td>
<td>3-1/2</td>
</tr>
<tr>
<td>8 to 10 inches</td>
<td>425</td>
<td>4-1/2</td>
</tr>
<tr>
<td>10 to 12 inches</td>
<td>600</td>
<td>5-1/2</td>
</tr>
</tbody>
</table>

Footnote (1): When brazing with cadmium-bearing materials or when cutting on such materials increased rates of ventilation may be required.

Footnote (2): Nearest half-inch duct diameter based on 4,000 feet per minute velocity in pipe.

2). Fixed enclosure:

a) A fixed enclosure with a top and not less than two sides which surround the welding or cutting operations, and,

b) With a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear feet (30 m) per minute.

f. Ventilation in confined spaces.

Air replacement. All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency. This applies not only to the welder but also to helpers and other personnel in the immediate vicinity. All air replacing that withdrawn shall be clean and respirable.

1). Airline Respirators. In circumstances for which it is impossible to provide such ventilation, airline respirators or hose masks approved for this purpose by the National Institute for Occupational Safety and Health (NIOSH) under 42 CFR part 84 must be used.

2). Self-contained Units. In areas immediately hazardous to life, a full-facepiece, pressure-demand, self-contained breathing apparatus or a combination full-facepiece, pressure-demand supplied-air respirator with an auxiliary, self-contained air supply approved by NIOSH under 42 CFR part 84 must be used.

3). Outside Helper. Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or self-contained breathing equipment approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health, a worker shall be stationed on the outside of such confined spaces to insure the safety of those working within.

g. Oxygen for ventilation. Oxygen shall never be used for ventilation.

19.4. Toxic or Explosive Gases, Dusts and Chemicals

a. Ducts and conveyor systems that might trap or carry sparks to distant combustibles
shall be suitably protected or shut off before welding or cutting is begun.

b. Adequate ventilation or approved respiratory protection shall be used when welding or cutting with zinc, brass, bronze, stainless steel, galvanized, lead-coated or cadmium-bearing materials. Refer to SDS for specifying health precautions.

c. Before employees are allowed to weld or cut on any chemical line or equipment, proper clearance shall be obtained and special instructions shall be followed.

d. Before welding or cutting is performed on any part of the hydrogen system that may contain hydrogen, the system shall be purged with carbon dioxide and a check made with an explosimeter to insure that all hydrogen has been removed.

19.5. Oil and Fuel Lines, Reservoirs and Containers

a. Before welding or cutting on oil or fuel lines, they shall be purged in accordance with approved operating procedures. Lube oil reservoirs shall be drained and cleaned before any welding or cutting is performed. All spilled oil in the immediate area of any welding or cutting operation shall be cleaned up.

b. No welding, cutting or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substance such as greases, tars, acids, or other material which when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the drum or vessel shall be disconnected or blanked.

19.6. Coal Handling System

a. Welding and cutting shall not be performed on any mill end, coal pipe or associated coal-laden duct until the equipment is removed from service and purged.

b. Before welding or cutting on coal feeder or conveyors, coal shall be removed from the floor a minimum of 35 feet in diameter around the worksite or suitable containment established for sparks and slag to minimize fire potential. Fire retardant covers shall be laid over the belt and remaining coal, to prevent ignition by sparks or molten metal.

c. Before welding or cutting in any coal field tunnel, a floor area 35 feet in diameter shall be cleaned around the work site. Blowers or fans shall be used to ventilate the tunnel and remove any explosive gases, which may exist.

20. HOUSEKEEPING

20.1. Grating shall be maintained according to the following directives:

a. Big Bend Grating Guidance

b. Use of Grating Clips in Energy Supply

20.2. Employees shall be responsible for maintaining a clean and orderly work place, whether on Company property, in vehicles, or at a job site.

20.3. Tools and material shall be placed so as not to create a tripping hazard. Aisles,
passageways and stairs shall be kept clear.

20.4. Scrap materials and debris should be picked up and disposed of promptly.

20.5. Protruding nails should be removed from boards, or the nails shall be flattened.

20.6. Vacuuming is the preferred method for dusty clean-up conditions.

20.7. Coal dust vacuuming can cause static electricity buildup, therefore all necessary controls shall be in place.

20.8. Use of compressed air for cleaning tools and workstations shall be evaluated to ensure proper PPE is utilized.

a. Compressed air may not exceed 30psi when utilized for cleaning.
b. At no time may compressed air be directed at a person.

20.9. Disposal of trash and debris shall be done in an approved environmentally safe manner.

20.10. Materials shall be stored in a manner so as not to obstruct access to fire protection equipment, control valves, fire doors, alarm devices or panels, electrical panels, Motor Control Centers or aisles and hallways that serve as a means of exit. A minimum clearance of 36 inches shall be maintained.

20.11. Materials shall not obstruct sprinkler heads. A minimum clearance of 36 inches shall be maintained.

20.12. Materials in hot work permit areas shall be limited to actual needs of the employees performing the work and shall be stored in a manner to protect combustible material from ignition sources.

20.13. Appropriate trash containers are placed around the station and are to be used for disposal of scrap materials and other construction-generated debris.

20.14. Flammable/combustible materials shall not be stored in areas used as exits, stairways, or passageways.

20.15. All solvent waste, oily rags, and flammable liquids shall be kept in fire-resistant covered containers, and disposed of daily.

21. HYDRAULICS


a. Employees shall know and comply with the Energy Supply Hazardous Energy Control Lockout Program or the Energy Supply Hazardous Energy Control Tagout Program.

b. Consult manufacturer’s maintenance procedures for specific instructions and warnings before attempting any hydraulic repairs.
c. Always neutralize (relieve) the pressure in all hydraulic systems before beginning disassembly.

d. Do not loosen fittings or lines when hydraulic systems are in operation or under pressure.

e. Air pressure shall not be used to remove or cycle the cylinder rod assembly. Only a controlled source of hydraulic pressure shall be used for hard-to-move rod assemblies.

f. Always use extreme care when removing plugs or any restriction from a hydraulic system suspected to have entrapped air that may be pressurized.

g. Never check for hydraulic leaks with your hand.

h. Hydraulic systems with a pressurized tank shall be vented slowly before removing the cap.

i. Secure or block in place any component that may fall, close, or present additional hazard upon removal of any hydraulic component.

21.2. Fleets Hydraulic Lifts and Jacks

a. Only qualified and authorized persons shall operate lifts. When directing vehicles over the lifts, employees shall maintain a safe clearance from the vehicle, and be cautious of tripping hazards.

b. Hydraulic lift controls shall be manually operated and not blocked in the open or shut position.

c. Before raising a vehicle, loose equipment on the vehicle shall be secured and doors closed. Overhead clearance shall be checked before raising any large piece of equipment.

d. Mechanical positive locking devices shall be used before any work is performed under vehicles that are on lifts.

e. Loads shall be squarely engaged, and neither the lift nor adapter shall be overloaded.

f. Jacks shall be securely positioned on a firm surface.

g. No work shall be done under a vehicle supported only by jacks. A vehicle on jacks shall be supported by adjustable stands or otherwise cribbed or blocked before work may begin.

h. Each jack shall have its load rating permanently and legibly marked. No jack shall be overloaded.

i. Every jack shall be inspected before use. Jacks shall be tested, and inspected during monthly shop inspections. Jacks that are damaged or unsatisfactory shall be tagged out-of-service, and repaired before returning to use.
j. When jacking a vehicle up or down, wheels shall be locked.

22. INCIDENT REPORTING

22.1. All incidents, no matter how minor, shall be reported in writing and/or through the on-line computer database.

22.2. Personal Injuries

a. If an employee is injured on the job, the person in charge and the Safety department shall be notified immediately *(prior to the end of shift and prior to leaving the station or worksite).*

b. If it is determined that the injured employee requires medical attention, he/she shall be referred to an authorized physician, clinic or hospital emergency room, and the injured employee’s supervisor shall make arrangements for transporting the employee to an authorized physician, clinic or a hospital, as soon as possible.

c. The supervisor shall be responsible for completing the Incident Reporting form, which is located on the Energy Supply Intranet Website.

d. A First Report of Injury shall be completed as well, and processed through the location’s OSHA Clerk.

e. First aid kits shall be regularly inspected and stocked with approved supplies as necessary.

22.3. Property Damage

a. Any incident that results in serious personal injury or extensive property damage to employees and non-employees (either on Company property or in connection with Company operations) shall be immediately reported to the person in charge and to Safety Department.

b. In accidents involving Company vehicles, the employee’s supervisor, as well as appropriate law enforcement agencies, shall be notified immediately, regardless of the amount of damage or who was at fault or whether the accident happened on private property.

c. All incidents of property damage to the public shall be reported promptly. The Incident Reporting Form shall be completed, reviewed by the department head and forwarded to the Risk Management Department.

22.4. Vehicular Incident

a. In accidents involving Company vehicles, the employee’s supervisor, as well as appropriate law enforcement agencies, shall be notified immediately, regardless of the amount of damage or who was at fault or whether the accident happened on private property.

b. A vehicular incident is any incident involving a mobile vehicle.

c. An incident report shall be completed on every vehicular incident.
22.5. Near Miss Incident

Any incident that could have resulted in injury or property damage, but did not, is considered a “Near Miss”, and shall be reported immediately, and investigated to determine root cause and fixes.

23. INDOOR AIR QUALITY

23.1. All employees shall comply with Tampa Electric Smoke-free Workplace Administrative Policy I.6.12.

23.2. Review SDS on all products and materials to identify those that should be used cautiously when applied indoors.

23.3. Maintain adequate ventilation when work tasks such as cleaning, etc., may create potential airborne irritants.

23.4. Maintain good housekeeping and minimize dusts and particulates. Avoid exposures through restricted uses of aerosols, solvents or other vapor producing products.

23.5. Employees shall report unusual conditions or concerns to supervisor.

24. JOB PLANNING

24.1. Before work is begun, a job briefing shall be performed by all affected employees.

24.2. The employee in charge shall conduct a job briefing with the employees involved before they start each job. The briefing shall cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements. Refer to Energy Supply Job Briefing Form.

24.3. The person in charge shall assemble the crew and explain the work to be done, outline the steps to be followed, personal protective equipment required, and point out the hazards of the job. The person in charge should ensure that each member of the crew understands the instructions.

24.4. If the work or operations to be performed during), the workday or shift are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of each day or shift. Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work.

24.5. A brief discussion is satisfactory if the work involved is routine and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job. A more extensive discussion shall be conducted: if the work is complicated or particularly hazardous, or if the employee cannot be expected to recognize and avoid the hazards involved in the job.

24.6. An employee working alone need not conduct a job briefing. However, the employer shall ensure that the tasks to be performed are planned as if a briefing were required.

24.7. The person in charge is responsible for accounting for all employees upon the completion of each job.
25. **LABORATORIES**

25.1. Appropriate PPE shall be utilized when handling chemicals.

25.2. SDS shall be reviewed before working with chemicals.

25.3. Only “Authorized” personnel shall use laboratory equipment.

25.4. Laboratories shall have an established procedure for handling chemical spills.

25.5. All chemical containers shall be properly labeled.

25.6. Safety glasses shall be worn while in the laboratory.

25.7. Laboratories shall be equipped with eyewash stations/bottles.

25.8. Chemical spills on skin or clothing shall be immediately flushed for a minimum of 15 minutes.

25.9. Use special automatic pipettes when drawing poisonous, toxic or corrosive liquids.

25.10. Employees shall not taste or sniff chemicals.

25.11. Employees shall not eat or drink from laboratory glassware.

25.12. Food and drink are not allowed in the laboratory.

25.13. Ventilation hoods shall be used when working with chemicals that produce toxic fumes or vapors.

25.14. Incompatible chemicals shall be stored in separate areas.

25.15. Volatile chemicals shall be stored away from sunlight, heat or electrical sparks.

26. **LADDERS**

26.1. Only approved ladders shall be used in a safe manner.

26.2. Manufacturers’ weight limit shall not be exceeded.

26.3. Ladders shall be visually inspected before they are used.

26.4. Defective ladders shall be tagged and removed from service. If they are not repairable, they shall be destroyed.

26.5. Employees shall face the ladder and use both hands when climbing up or down. Tools shall not be carried in the hand. They shall be raised or lowered in a safe manner.

26.6. Employees shall not slide down a ladder. They shall take one step or rung at a time.

26.7. Only one employee is allowed on a ladder at a time, unless otherwise indicated by manufacturer’s recommendations.
26.8. A portable ladder shall be moved as work progresses to avoid overreaching.

26.9. Two ladders shall never be lashed together to make a longer one, unless otherwise indicated by manufacturer's recommendations.

26.10. When using straight or extension ladders, employees shall not climb past the third rung from top.

26.11. Employees shall ensure that both latches of an extension ladder are seated properly. The minimum overlap for extension ladders is three feet.

26.12. Ladders shall be tied off, top and bottom, to a substantial support whenever practical. Under certain conditions it may be necessary for another employee to hold the ladder to prevent falling or slipping.

26.13. The ladder shall be placed at a proper angle, with the base set out one foot for every four feet of ladder length.

26.14. Ladders are intended for access purposes. When work must take place from a straight, extension or fixed ladder, and the job requires the use of both hands, a personal fall arrest system shall be used.

26.15. If an employee is required to transfer from a ladder to a landing, the side rails shall extend at least three feet above the landing.

26.16. When using a stepladder,
   a. The employee shall not stand on the top step or on the top of the ladder.
   b. A stepladder shall not be used as a substitute for a straight ladder.
   c. Before climbing a stepladder, employees shall make sure spreaders are fully extended and locked.
   d. Employees shall climb the steps of a stepladder, not the support rungs.

26.17. Before using a platform ladder, it shall be checked to determine that the locking mechanism is functioning properly.

26.18. In assembling stack ladders, employees shall make certain that sections are properly locked together. Assembled stack ladders shall be limited to three sections.

26.19. Ladders shall not be painted, except that non-skid paint may be applied to steps or rungs.

26.20. Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment.

27. **LIGHTING**

27.1. Where natural illumination is not adequate, artificial lighting shall be provided. Open flames shall not be used for purposes of illumination.

27.2. Temporary lighting (except battery powered) shall be protected with approved guards.
27.3. In areas where flammable or combustible vapors, gases, liquids, dust or fibers may be present, only equipment approved for the hazardous location shall be used.

TABLE 28. - Minimum Illumination Intensities in Foot-Candles

<table>
<thead>
<tr>
<th>Foot-candles</th>
<th>Area or operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>General site areas.</td>
</tr>
<tr>
<td>3</td>
<td>Excavation and waste areas, access ways, active storage areas, loading platforms,</td>
</tr>
<tr>
<td></td>
<td>refueling, and field maintenance areas.</td>
</tr>
<tr>
<td>5</td>
<td>Indoors: warehouses, corridors, hallways, and exit ways.</td>
</tr>
<tr>
<td>5</td>
<td>Tunnels, shafts, and general underground work areas; (Exception: minimum of 10 foot-</td>
</tr>
<tr>
<td></td>
<td>candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Safety and Health Administration approved cap lights shall be acceptable for use in the tunnel heading.</td>
</tr>
<tr>
<td>10</td>
<td>General shops (e.g., mechanical and electrical equipment rooms, active storerooms,</td>
</tr>
<tr>
<td></td>
<td>barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets</td>
</tr>
<tr>
<td></td>
<td>and workrooms.</td>
</tr>
<tr>
<td>30</td>
<td>First aid stations, infirmaries, and offices.</td>
</tr>
</tbody>
</table>

28. LINE BREAKING

28.1. Purpose:

a. The purpose of the line-breaking procedure is to ensure that all precautions have been taken to protect those employees performing line breaking and those working in the vicinity.

b. The Hazardous Energy Control Supervisor shall be responsible for ensuring that the Tampa Electric Company, Energy Supply Hazardous Energy Control Lockout Program or Energy Supply Hazardous Energy Control Tagout Program has been initiated, in order to control the presence of hazardous materials or energy. At no time shall Line Breaking precautions be followed as a substitute for complete application of the Hazardous Energy Control requirements.

28.2. Line Breaking Procedure Application:

a. The line breaking procedure is required when all of the following cannot be accomplished:

   1. The Hazardous Energy Control program has been applied and is followed;
   2. The line/vessel is drained of hazardous materials/chemicals and vented and there is verifiable flow of expected quantity from the drain valve or vent, and all equipment is tagged;
   3. Lines, vessels and equipment have been cleared of hazardous chemicals that could cause chemical exposure.

b. When the above cannot be accomplished, the maximum level of protection,
including PPE and precautions, needed to protect the worker, shall be used during the line-breaking work while the hazard of exposure exists. Refer to Table A for specific precautions required according to hazards.

28.3. Exceptions to the Requirement for a Line-breaking Procedure:

a. Instrument air below 30 psi

b. Potable water systems, fire water systems, storm water systems, or treated water systems below 100 psi and 125 degrees Fahrenheit, and pH from 5 to 9.

c. Routine operations and maintenance jobs such as: connecting or disconnecting hoses and gas cylinders.

28.4. Linebreaking Procedure


b. The employee in charge of the line breaking shall ensure that:

1). All precautions have been taken, including HEC procedures; and

2). A Safety Job Briefing has been performed with the crew discussing all potential hazards, appropriate precautions, everyone’s understanding of special precautions, PPE, duties and a work plan.

c. Determine appropriate PPE and precautions required utilizing Table A. While working on or preparing the line or equipment, all required personal protective equipment must be worn until the line or piece of equipment is considered safe as described in 28.2.

d. All efforts shall be made to isolate, purge, drain and wash lines prior to breaking them. Only as a last resort should piping under pressure, except those listed in the exception section 28.3, be opened by breaking a flange, union, or other fitting. All precautions must be followed and the work approached with extreme caution.

e. The work area shall be barricaded to prevent unauthorized personnel from entering. Consideration shall be made for areas below the work area where material may fall.

f. Determine prior to start of work if all necessary parts, material, and tools needed are available at the job site. Do not begin the task until all necessary items are staged. Perform required equipment inspections in advance of starting work, such as scaffolding inspections and rigging and/or lifting equipment.

g. Testing of eyewash/safety shower shall be performed prior to beginning to loosen the line being broken, as required in Table A.

h. Assign a Fire Watch for work involving hot work as prescribed in the Energy Supply Hot Work Program. The Fire Watch may not also be the Safety Watch.

i. Assign Safety Watch for line breaking jobs on all classes of materials at least until the line is considered safe as described in 28.2.
j. The Safety Watch’s responsibilities and requirements will be as follows:

1). The safety watch is responsible for observing the line-breaking and rendering help when needed, such as helping someone to a safety shower. Their responsibilities also include summoning aid in the event of an exposure or release of hazardous material.

2). The safety watch shall be equipped with the same safety equipment as the crew performing the job, and will not be assigned to another responsibility while acting as safety watch. The safety watch may not also be the Fire Watch.

3). When line breaking is being performed from a high reach or other mechanical platform, the safety watch shall be on the ground within sight of the job and have all the necessary safety equipment. The safety watch shall be qualified to operate the high reach.

4). Once the line is considered safe, as described in 1.2, the safety watch is no longer required.

k. The employee performing the line break shall open the line first on the side opposite of any personnel. Treat all lines as if they are under pressure, even if they have been drained, purged, isolated, and/or washed. Even empty or drained lines can spray, leak, or drip unexpectedly.

l. Every effort shall be made to contain potentially hazardous materials drained.
## Table A. Precaution Requirements

Note: Minimum PPE requirements are always to be followed, except where a higher level of protection has been designated in the table. Minimum PPE includes: hard hat, safety glasses with side shields, steel-toed shoes, long pants, and a short sleeved shirt.

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Face/eye Protection</th>
<th>Gloves</th>
<th>Clothing</th>
<th>Foot Protection</th>
<th>Respirator</th>
<th>Gas Monitor</th>
<th>Special Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia</td>
<td>Face shield and goggles or full face respirator</td>
<td>Neoprene or Rubber</td>
<td>Full Suit</td>
<td>Minimum</td>
<td>Air purifying MG cartridge (3M 60926 or Scott 7422SD1)</td>
<td>Ammonia</td>
<td>If possible clear personnel away at least 100 ft radius in all directions of linebreak site.</td>
</tr>
<tr>
<td>Caustic</td>
<td>Face shield and goggles</td>
<td>Minimum elbow length, acid resistant, PVC or Neoprene (8 hours)</td>
<td>Full suit, acid resistant</td>
<td>Acid resistant rubber with steel toe</td>
<td>Air purifying respirator with MG (3M 60926) cartridge</td>
<td>Not required</td>
<td>Have water source running and readily available for neutralization</td>
</tr>
<tr>
<td>Fyrquel</td>
<td>Face shield and goggles</td>
<td>Rubber</td>
<td>Tyvek coveralls</td>
<td>Minimum</td>
<td>Air purifying respirator with OV/AG (3M 60923) cartridge</td>
<td>Not required</td>
<td>None</td>
</tr>
<tr>
<td>Gypsum Slurry</td>
<td>Face shield and goggles</td>
<td>Rubber</td>
<td>Tyvek coveralls</td>
<td>Minimum</td>
<td>Not required</td>
<td>Not required</td>
<td>None</td>
</tr>
<tr>
<td>Hydrazine or Cortrol OS 5005</td>
<td>Face shield and goggles</td>
<td>Neoprene, nitrile, PVC</td>
<td>Full suit, neoprene, nitrile, PVC</td>
<td>Neoprene, nitrile, PVC</td>
<td>Not required</td>
<td>Not required</td>
<td>Safety Shower, eyewash</td>
</tr>
<tr>
<td>Exposure</td>
<td>Face/eye Protection</td>
<td>Gloves</td>
<td>Clothing</td>
<td>Foot Protection</td>
<td>Respirator</td>
<td>Gas Monitor</td>
<td>Special Precautions</td>
</tr>
<tr>
<td>---------------</td>
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<td>----------------</td>
<td>----------------</td>
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<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>Face shield and safety glasses</td>
<td>Leather</td>
<td>FR suit/coveralls</td>
<td>Minimum</td>
<td>Not required</td>
<td>Hydrogen Monitor</td>
<td>Non-sparking tools, ensure no ignition source within 35 ft.</td>
</tr>
<tr>
<td>MDEA</td>
<td>Face shield and goggles</td>
<td>Nitrile</td>
<td>Rainsuit or tyvek coverall</td>
<td>Minimum</td>
<td>Not required</td>
<td>Not required</td>
<td>None</td>
</tr>
<tr>
<td>Molten Sulfur</td>
<td>Face shield and goggles</td>
<td>Heat resistant</td>
<td>FR suit/coveralls</td>
<td>Minimum</td>
<td>Supplied air: SCBA or SAR</td>
<td>4-gas monitor</td>
<td>Safety Shower, eyewash, non-sparking tools, no ignition source within 35 feet</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Face shield and safety glasses</td>
<td>Leather</td>
<td>FR suit/coveralls</td>
<td>Minimum</td>
<td>Not required</td>
<td>4-Gas Monitor</td>
<td>Non-sparking tools, ensure no ignition source within 35 ft.</td>
</tr>
<tr>
<td>Nitrogen (gaseous)</td>
<td>Minimum</td>
<td>Leather</td>
<td>Minimum</td>
<td>Minimum</td>
<td>Not normally required. When large volumes of gas are anticipated use SCBA or SAR</td>
<td>4-Gas Monitor</td>
<td>None</td>
</tr>
<tr>
<td>Oxygen</td>
<td>Face shield and safety glasses</td>
<td>Leather</td>
<td>FR suit/coveralls</td>
<td>Minimum</td>
<td>Not required</td>
<td>4-Gas Monitor</td>
<td>Ensure no ignition source within 35 ft. Ensure no oil or grease is used.</td>
</tr>
<tr>
<td>Product Description</td>
<td>Personal Protective Equipment</td>
<td>Flammables</td>
<td>Combustibles</td>
<td>Minimum</td>
<td>Flammables:</td>
<td>Combustibles:</td>
<td>Additional Precautions</td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>----------------------------------------</td>
</tr>
<tr>
<td>Petroleum Products</td>
<td>Face shield and goggles</td>
<td>Nitrile or PVC</td>
<td><strong>Flammables</strong>: FR shirt/jacket, PVC or nitrile apron</td>
<td>Minimum</td>
<td><strong>Flammables</strong>: Air purifying respirator with MG (3M 60926) cartridge</td>
<td><strong>Combustibles</strong>: None required</td>
<td>Not required Non-sparking tools, ensure no ignition source within 35 ft.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Combustibles</strong>: Tyvek or acid (PVC) suit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propane</td>
<td>Face shield and safety glasses</td>
<td>Leather</td>
<td>FR suit/coveralls</td>
<td>Minimum</td>
<td>Not required</td>
<td></td>
<td>4-Gas Monitor Non-sparking tools, ensure no ignition source within 35 ft.</td>
</tr>
<tr>
<td>Sodium Hypochlorite (Bleach)</td>
<td>Face shield and goggles</td>
<td>Nitrile, Neoprene, PVC</td>
<td>Rainsuit or tyvek coveralls</td>
<td>Minimum</td>
<td>Air purifying respirator with MG (3M 60926) cartridge</td>
<td>Not required</td>
<td>Safety Shower, eyewash</td>
</tr>
<tr>
<td>Steamate NA 1324</td>
<td>Face shield and goggles</td>
<td>Neoprene, Nitrile, PVC</td>
<td>Full Suit – neoprene, nitrile, PVC</td>
<td>Minimum</td>
<td>Air purifying respirator with MG (3M 60926) cartridge</td>
<td>Not required</td>
<td>Safety Shower, eyewash</td>
</tr>
<tr>
<td>Steam/Hot Condensate</td>
<td>Face shield and goggles</td>
<td>Heat resistant and waterproof gloves</td>
<td>Rain jacket/pants</td>
<td>Minimum</td>
<td>Not required</td>
<td>Not required</td>
<td>None</td>
</tr>
</tbody>
</table>

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**Note:**
- **Flammables** are substances that can catch fire easily.
- **Combustibles** are materials that can support combustion.
- **Non-sparking tools** are tools designed to avoid creating sparks, which can cause fires or explosions.
- **Air purifying respirator** with MG (3M 60926) cartridge is a device used to filter out hazardous air particles.
- **Safety Shower, eyewash** are emergency equipment used to provide immediate relief for chemical exposure.

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<table>
<thead>
<tr>
<th>Sulfuric Acid</th>
<th>Face shield and goggles</th>
<th>Minimum elbow length, acid resistant (PVC, Nitrile)</th>
<th>Full suit, acid resistant</th>
<th>Acid resistant rubber with steel toe</th>
<th>Air purifying respirator with MG (3M 60926) cartridge.</th>
<th>Not required</th>
<th>Have water source running and neutralization chemicals readily available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Face shield and goggles</td>
<td>Leather</td>
<td>FR coverall</td>
<td>Minimum</td>
<td>Supplied air: SCBA or SAR</td>
<td>4-gas Monitor</td>
<td>Non-sparking tools. Ensure no ignition source within 35 ft.</td>
</tr>
<tr>
<td>Syngas</td>
<td>Face shield and safety glasses</td>
<td>Leather</td>
<td>FR coverall</td>
<td>Minimum</td>
<td>Supplied air: SCBA or SAR</td>
<td>4-gas Monitor</td>
<td>Non-sparking tools. Ensure no ignition source within 35 ft.</td>
</tr>
<tr>
<td></td>
<td>Face shield and goggles</td>
<td>Rubber, plus heat resistant protection when temperature greater than 125 deg. F</td>
<td>Rain jacket/pants</td>
<td>Rubber with steel-toe</td>
<td>Not normally required unless gas or vapors are present. Use Air purifying respirator with MG (3M 60926) cartridge for gas/vapor.</td>
<td>Not normally required</td>
<td>None</td>
</tr>
<tr>
<td>Water (Not exempted in 1.3b)</td>
<td>Face shield and goggles</td>
<td>Rubber, plus heat resistant protection when temperature greater than 125 deg. F</td>
<td>Rain jacket/pants</td>
<td>Rubber with steel-toe</td>
<td>Not normally required unless gas or vapors are present. Use Air purifying respirator with MG (3M 60926) cartridge for gas/vapor.</td>
<td>Not normally required</td>
<td>None</td>
</tr>
</tbody>
</table>

Note: PVC = 8 hours of protection, Nitrile = 1 to 4 hours of protection
29. **LOCOMOTIVES**

29.1. Employees shall stay clear of all trains, engines and cars, as they may be moved at any time on any track in either direction.

29.2. Locomotive operators shall take signals only from designated signalmen except in an emergency.

29.3. A STOP signal shall be obeyed regardless of who gives the signal.

29.4. The operator shall not proceed if an unsafe act is apparent, but shall notify the signalman at once.

29.5. Before moving a locomotive, the operator shall give proper warning with a bell or horn. A warning shall be sounded when approaching a walkway or driveway, when passing cars on an adjacent track or when passing any structure obstructing the operator’s view.

29.6. Employees shall not shift or adjust drawheads or knuckles while locomotives or cars are in motion.

29.7. Employees shall not stand between rail cars or between locomotives and rail cars while they are in motion.

29.8. Employees shall not run in front of a moving locomotive or rail cars to throw a switch.

29.9. Blue flags shall be utilized for all rail activities.

29.10. “Flying” coupling, or “flying” switching of rail cars shall not be permitted. Employees engaged in switching or dumping cars may not use their feet to line up drawheads.

30. **MATERIAL HANDLING AND MATERIAL HANDLING EQUIPMENT**

30.1. General.

a. See Electrical Safety Program

b. Material handling equipment shall be operated only by trained and qualified personnel as defined by the applicable OSHA standards.

c. When working around overhead work, employees shall wear a hard hat.

d. The controls of all material handling equipment shall be clearly marked.

e. The operator shall take all signals from the designated signalman. Should it be apparent that obeying a signal would result in an injury; the operator shall not proceed but shall notify the signalman at once. A STOP signal shall be obeyed regardless of who gives the signal.

f. All lifting equipment, slings and attachments shall be visually inspected to include ensuring that they are properly marked to show load capacity. Any equipment not properly marked shall be tagged out of service until inspected and recertified.
g. The rated capacity (weight limit) of the equipment shall not be exceeded. Both the weight of the load and the capacity of the equipment must be known prior to the lift.

h. Clearances shall be checked before raising or lowering a load.

i. After the slack is taken up, employees shall stand clear of the load (with no portion of the body under the load) before the actual lift is started. When moving large, heavy equipment or materials by crane, a tag line shall be used.

j. Operators shall not move loads over the heads of employees. Employees shall not work under suspended loads or inside the angle of a winch line.

k. Suspended work platforms shall not be used unless no other means to access work is available.

l. The operator shall not leave controls unattended when the load is suspended.

m. Upon leaving the material handling equipment, the operator shall be certain to open all necessary switches or controls or apply brakes to prevent movement of the material handling equipment while unattended.

n. Should material handling equipment lose power, the controls shall be turned to the OFF position, until power is restored.

o. An approved fire extinguisher shall be easily accessible to the material handling equipment operator in the cab.

p. A load shall be attached to the hook only through approved lifting devices.

q. After the load is removed, the hook and/or slings shall be secured.

r. Employees shall exercise extreme caution when working in the vicinity of a mobile crane that is operating near exposed energized equipment.

s. Approach distances with overhead lines shall be constantly checked. An observer shall be used when material handling equipment is within twenty feet of exposed energized overhead lines.

t. When working within twenty feet of exposed energized lines or equipment, refer to the Energy Supply Material Handling Equipment Program for appropriate additional safety precautions.

u. If the mobile crane accidentally makes contact with energized equipment, employees shall not approach the crane until the contact is broken.

v. Employees shall exercise extreme caution when removing radiator caps, drain plugs, grease fittings or hydraulic pressure caps on bulldozers, locomotives, etc.

w. Seat belts shall be worn on bulldozers and front-end loaders, and any machinery equipped with seat belts.
x. No equipment shall be operated if the manufacturer’s manual is not readily accessible.

y. Mobile equipment operators shall complete an equipment-specific checklist at the beginning of each shift, prior to using the unit. A written copy of the completed checklist shall be retained on file according to department procedures.

z. Upon control difficulty, malfunction, or equipment failure, the unit shall be tagged out-of-service until repairs are made.

aa. Forklift trucks shall not be used in place of jacks.

bb. When hoisting materials and tools from one level to another, employees should ensure that the hoisting rope is rated appropriately for the weight being lifted. The rope should be inspected prior to use. Extra caution should be used for manila rope, as this type of rope is more prone to UV damage and dry-rot.

c. Personnel shall not utilize plastic buckets with unsecured handles for hoisting tools or materials from one level to another. A tool bag, nose bag, or similar devise designed for transporting equipment and tools shall be used. Personnel shall ensure that the load is secured within the bag, that the load will not shift when hoisted, and that the bag is secured on the hoisting rope.

d. “Heavy loads”, including, but not limited to, tractor trailers, large cranes or “special permitted” material movers may be brought without restriction onto Energy Supply station property provided that they do not exceed the following load limits:

1. A single axle, of a vehicle with axles spaced a minimum of 10 feet apart, shall not exceed 32,000 lbs., or;
2. The sum of the axles, of a vehicle with multiple axles spaced within 10 feet, shall not exceed 32,000 lbs., or;
3. Any load that exerts a ground pressure that exceeds 2,000 lbs. per square ft. Before heavy loads, that exceed the above, are brought onto Energy Supply Stations, an Energy Supply Structural Engineer shall be notified so that a plan may be developed to maintain the integrity of that station’s tunnels and/or other underground utilities.

30.2. Forklift Operations

a. Only qualified and authorized personnel shall operate a forklift, in accordance with manufacturers’ safe operating instructions.

b. Hard hats and safety glasses shall be worn at all times when operating a forklift.

c. The operator shall complete an equipment checklist examination at the beginning of each shift prior to using the unit. A written copy of the completed checklist should be retained on file according to department procedures.

d. Drivers shall be required to slow down and sound horn at cross aisles and other locations where vision is obstructed.
e. Forklifts with gasoline or diesel engines shall not be operated in an enclosed area for prolonged periods of time, so as not to exceed the allowed levels of carbon monoxide.

f. When a forklift is moved, loaded or empty, forks shall be carried as low as possible but high enough to clear uneven surfaces.

g. Loads shall not be raised or lowered while the truck is traveling.

h. The warning light and/or headlights shall be turned ON whenever the forklift is in operation.

i. Passengers are not allowed to ride a forklift.

j. No one shall be permitted to ride the load or on forks at any time.

k. When forklifts are used in loading and unloading operations inside vans or trucks, special precautions shall be exercised. The vehicle shall be properly docked, and parked with the wheels safely chocked. In addition, there shall be no personnel permitted inside the van or trailer while the forklift is in operation inside of the van or trailer. The tractor trailer truck or van driver must be outside of the vehicle cab while the van or trailer is being loaded and the vehicle must be turned off.

l. Forklift Platforms and Work Baskets:

   1). Only a Manufacturer approved platform shall be used as a manlift. The platform will be properly secured according to manufacturer specifications to the mast or forks, and guards will be in place to prevent hands or materials from passing into the mast area.

   2). Appropriate personal fall arrest equipment (full body harness and lanyard) shall be used and properly secured by all personnel while working in an elevated platform. The full body harness and shock absorbing lanyard shall be inspected prior to operating the unit to ensure they are in good repair and securely fastened.

   3). Personal fall arrest equipment shall be properly secured to the fork-tine carriage and not to the platform or workbasket or as specified by the manufacturer.

   4). The forklift operator shall never leave the lift while an occupied work platform/basket is elevated.

m. Order Picker:

   1). Personal fall arrest equipment shall be properly worn at all times by the operator of the order picker either when operating the unit or retrieving orders.

   2). When operating the order picker elevate the platform only to pick and order, pick up a stack or to stack a load. Lower the platform close to the floor before moving the unit.
3) Order picker trucks should not be used on ramps and are not designated for outdoor use.

4) Order picker trucks are designed for use on smooth, hard floors with minimal grades. They should be used in dry areas only.

n. Upon control difficulty, malfunction, or equipment failure, the unit shall be tagged out-of-service until repairs are made.

o. When the forklift is not in use, the forks shall be lowered, brakes set, and the key turned to the OFF position.

p. Personnel shall not stand or pass beneath the elevated forks, whether loaded or empty.

q. Forklift trucks shall not be used in place of jacks.

r. Only loads which are securely and safely loaded and within the rated capacity of the truck shall be handled.

s. Forklifts shall be shut-off while refueling.

t. Only manufacturer approved attachments or lifting devices are permitted. No design modifications, including counterweights and drilling of holes in forks, can be made without the manufacturer’s approval and issuance of a new data plate.

u. All fork tine attachments, slings and lifting accessories shall be properly marked indicating load capacity.

v. The rated capacity of all equipment shall not be exceeded. Equipment not rated with load capacity shall be taken out-of-service until properly inspected and rated.

w. Seatbelts shall be worn by the operator on all forklifts equipped with seatbelts.

x. Use manufacturer approved towing attachments to tow loads with a forklift. Comply with the manufacturer’s recommendations and operational requirements for towing.

30.3 Tuggers

a. All tugger installations shall include a secondary restraint capable of counteracting the potential load being pulled.

b. Whenever possible, tugger installation shall be anchored into structural steel.

c. When installing tuggers on elevated concrete slabs, the bolts restraining the upward force of the tugger shall be through-bolted with backing plate, or, attached to structural steel.

d. When tugger is mounted on ground floor slab or equipment foundation, epoxy anchors shall be installed to the maximum embedment, as recommended by the product manufacturer. The concrete slab and foundation shall be thoroughly
assessed for condition and design. If concrete anchors are utilized for mounting
tuggers, all manufacturer installation recommendations shall be strictly adhered to.

31. **OFFICE SAFETY PRACTICES**


a. Use handles to open and close file drawers or cabinets.

b. Do not leave filing drawers or other cabinets open while unattended.

c. Open one drawer at a time to prevent the file cabinet from tipping over and to reduce the chance of you striking your head.

d. When possible, fill filing cabinets from the bottom to the top to prevent tipping.

e. Storage on top of a cabinet should be stable and limited in height to a single object that does not extend beyond the surface. A space of at least 18 inches should be maintained between any storage and the ceiling and fire sprinkler heads.

f. Do not lean back in chairs with feet propped or raised above seat level to prevent tipping over backward. While sitting in a chair keep all chair legs in full contact with the floor at all times.

g. Damaged chairs or office furniture shall not be used. They shall be removed from service and tagged for repair using a repair tag, or discarded.

h. Only approved step stools and ladders shall be used to reach elevated objects or locations. Do not stand on desks or chairs.

i. Turn OFF and unplug office machines prior to making adjustments, repairs, or performing maintenance. In addition, unattended electrical equipment such as space heaters, coffee makers, etc. should be turned off at the end of the day.

j. Keep overhead bins fully opened or fully closed.

k. Do not overload electrical circuit boxes.

l. Do not allow electrical cords, cables, telephone wires, drawers, boxes, files, trash bins, or personal belongings to be tripping hazards.

m. Periodically inspect equipment cords and plugs for damage.

n. Keep all means of egress unblocked.

o. Keep all stairways clear of items that can be tripping hazards. Stairwells shall not be used as storage areas.

p. Be sure that you are familiar with your location’s emergency exit plan.
q. Be sure that emergency exit signs are illuminated. Report deficiencies to the appropriate facilities maintenance personnel.
r. Practice good lifting techniques; plan your lift, avoid twisting, lift with your legs.
s. Do not carry anything that obscures your vision.
t. Keep one hand free when utilizing stairways, so that you are able to grasp the handrail.
u. Report loose carpeting or damaged flooring so that it can be repaired. Anything that is an immediate hazard should be marked or blocked off to prevent walking in the area.
v. Wipe up spills immediately. Utilize “wet floor” signs where areas may be slippery from wet mopping.
w. Keep the blades of hand paper cutters in the down position and locked when not in use.
x. Store heavy objects on lower shelves.
y. Do not place plants in areas where dripping or spilled water may contact electrical equipment.

31.2. Computer Practices

Refer to Section 9 Ergonomics for additional information.

a. Refer to the Link to OSHA Computer Workstations etool for ergonomics.
b. Position display screen slightly below eye level and avoid glare on the screen.
c. Adjust work surfaces and space to comfortably perform work tasks.
d. Adjust keyboard position to ensure proper position, angle, and comfort, at or slightly below elbow height, in the neutral position.
e. Take periodic rest pauses to stretch and to alleviate or delay onset of fatigue as necessary.
f. Sit upright to avoid straining neck and back.
g. Use a footrest if feet don't rest comfortably on the floor.
h. Shift sitting position frequently to relax tension away.
i. Blink frequently. Make a conscious effort of it so your eyes won't get dry.
32. PERSONAL PROTECTIVE EQUIPMENT

32.1. Refer to Energy Supply Personal Protective Equipment Program.

32.2. Whenever it is necessary to work in a location where there is a possibility of falling into water, employees shall wear Coast Guard approved personal flotation devices.

32.3. Clothing, Jewelry and Accessories

a. Loose dangling jewelry or flapping clothing such as neck ties and unbuttoned cuffs, shall not be worn when working around moving machinery or rotating parts. Shirttails shall be kept tucked in.

b. When work is performed within reaching distance of exposed energized parts or equipment, the employee shall remove or render nonconductive all exposed conductive articles, such as key or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.

c. Special care shall be used to make sure that rings and other jewelry items do not catch on fixed objects when employees move from one elevation to another.

d. Employees shall be required to safely secure hair if the hair length presents a hazard around moving machinery.

e. Employees engaged in activities where there is danger of injury to the arms such as cuts, abrasions, or thermal burns shall wear a long sleeve shirt buttoned and/or pulled down to the wrist. Hot Work shall not be performed in synthetic (Tyvek, Kimberly Clark, Paper, etc.) coveralls.

f. Where there is exposure to flames, electric shock or arc flash hazards, affected employees shall wear approved apparel. Clothing made from the following types of fabrics, either alone or in blends, is prohibited: acetate, nylon, polyester, rayon.

g. Refer to Energy Supply Personal Protective Equipment Program for approved apparel.

h. Recreational personal headsets and earphones shall not be used while operating a company vehicle, nor shall they be worn while on the job.

32.4. Eye Protection

Refer to Energy Supply Personal Protective Equipment Program.

32.5. Fall Protection

Refer to Energy Supply Fall Protection Program.

32.6. Foot Protection
Refer to Energy Supply Personal Protective Equipment Program.

32.7. Hand Protection

Refer to Energy Supply Personal Protective Equipment Program.

32.8. Head Protection

Refer to Energy Supply Personal Protective Equipment Program.

32.9. Hearing Protection

Refer to Energy Supply Hearing Conservation Program.

32.10. Respiratory Protection

Refer to Energy Supply Respiratory Protection Program.

33. PERSONNEL PLATFORMS

33.1. Aerial lifts may be "field modified" for uses other than those intended by the manufacturer, provided the modification has been certified in writing by the manufacturer or by any other equivalent entity, such as a nationally recognized testing laboratory, to be in conformity with all applicable provisions of ANSI A92.2 - 1969 and this section, and to be at least as safe as the equipment was before modification.

33.2. Extensible and articulating boom platforms:

a. Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

b. Only trained persons shall operate an aerial lift.

c. Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.

d. Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

e. A body harness shall be worn and a lanyard attached to the boom or basket when working from an aerial lift.

f. Boom and basket load limits specified by the manufacturer shall not be exceeded.

g. The brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline.

h. An aerial lift truck may not be moved when the boom is elevated in a working
position with men in the basket, except for equipment which is specifically
designed for this type of operation.

i. Articulating boom and extensible boom platforms, primarily designed as personnel
carriers, shall have both platform (upper) and lower controls. Upper controls shall
be in or beside the platform within easy reach of the operator. Lower controls shall
provide for overriding the upper controls. Controls shall be plainly marked as to
their function. Lower level controls shall not be operated unless permission has
been obtained from the employee in the lift, except in case of emergency.

j. Climbers shall not be worn while performing work from an aerial lift.

k. The insulated portion of an aerial lift shall not be altered in any manner that might
reduce its insulating value.

l. Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it
is properly cradled and outriggers are in stowed position, except as allowed by
manufacturer.

m. Electrical tests shall be made in conformance with the requirements of ANSI A92.2
- 1969, Section 5. However, equivalent DC voltage tests may be used in lieu of the
AC voltage test specified in A92.2 - 1969. DC voltage tests which are approved by
the equipment manufacturer or equivalent entity shall be considered an equivalent
test for the purpose of this requirement.

n. Bursting safety factor: All critical hydraulic and pneumatic components shall
comply with the provisions of the American National Standards Institute standard,
ANSI A92.2 - 1969, Section 4.9 Bursting Safety Factor. Critical components are
those in which a failure would result in a free fall or free rotation of the boom. All
noncritical components shall have a bursting safety factor of at least two to one.

34. **PRECIPITATORS**

Aerial Entry into precipitators shall be under the provisions of the Energy Supply Confined Space
Program, Energy Supply Hazardous Energy Control Lockout Program, and the Arsenic section of
the safe work practices.

34.1. Before anyone opens a precipitator, the electrical system of the precipitator shall be de-
energized, grounded, properly tagged and the safety key interlocks in place.

34.2. Personal fall arrest systems must be utilized if fall hazards exceed 4 feet.

34.3. Employees who enter a precipitator in a coal-fired unit shall wear approved respiratory
protection, monogoggles, hard hat and work gloves.

34.4. When washing down the inside of a precipitator, appropriate personal protective
equipment shall be worn.

34.5. Precipitator hopper doors shall not be opened until hoppers have been internally inspected
from above. When opening doors employees shall stand to the side and not directly in
front of the door.
34.6. No objects shall be pushed up into the bottom of the hopper for any reason while precipitator is energized.

34.7. Safeguard interlocks shall not be bypassed or defeated.

35. **PROCESS SAFETY MANAGEMENT**

35.1. All applicable processes defined in OSHA 29 CFR 1910.119 (a) (1) (ii) shall be identified within the Company and a Process Safety Management Program shall be developed and implemented.

35.2. All process safety information shall be compiled and a process hazard analysis shall be performed.

35.3. Written operating procedures shall be implemented and employees trained in the knowledge, skills, and abilities required to safely carry out the duties and responsibilities specified in the operating procedures.

35.4. Employees shall participate in developing the Process Safety Management Program.

35.5. Contractors shall be trained as to the hazards of the process(s) and procedures in order that they are not endangered from the hazardous process.

35.6. Contractors’ safety records shall be reviewed and evaluated initially and periodically for safety performance.

35.7. Contractors shall ensure that their employees are trained to safely perform work, document the training, ensure that safety rules are followed, and are advised of the hazards presented by the work.

35.8. A pre-startup safety review shall be performed on new facilities and modified facilities.

35.9. A mechanical integrity program for critical equipment shall be developed and implemented to ensure it is designed, installed and operates properly.

35.10. A Hot Work Permit must be issued for hot work operations performed near a covered process and ensure that fire prevention and protection requirements of OSHA 29 CFR 1910.252 (a) have been implemented.

35.11. A method to manage process change shall be developed and implemented to ensure a thorough evaluation of the change and the impact on employee safety.

35.12. All process safety incidents shall be investigated within 48 hours of occurrence to identify and correct the root cause for the failure or unanticipated event.

35.13. An emergency safety plan shall be developed and implemented.

35.14. A compliance audit shall be performed at least every three years to ascertain the effectiveness of the Process Safety Management Program.

35.15. All process safety management information shall be available to employees upon request.
36. **PUBLIC SAFETY**

36.1. Whether indoors or outdoors, precautions shall be taken to warn and restrict the public's exposure to hazards created by Company operations.

36.2. When working on or near streets and highways, signs, signals and other warning devices shall be used in accordance with all applicable requirements.

36.3. When a Company operation affects the general public in any way, every effort shall be made to warn and limit the public from the hazards which exist.

36.4. Unattended holes or floor openings shall be covered or adequately barricaded. Warning lights with proper barricades shall be placed at each opening or obstruction left overnight.

36.5. Employees finding low or fallen wires, broken poles or other damaged electrical equipment shall guard them until relieved by personnel qualified to deal with the situation, or until informed by an authorized person that the condition has been made safe.

36.6. Employees who recognize other hazardous conditions such as crane operations, well-drilling operations and erection of antennas adjacent to energized lines and natural gas pipelines shall warn the individual and report the incident as soon as possible to System Service or their supervisor.

36.7. Employees shall ensure that visitors are not unduly exposed to hazards and shall ensure that they wear appropriate personal protective equipment.

37. **SEWER WATER WORKS**

Refer to [Energy Supply Bloodborne Pathogens Program](#).

37.1. Proper PPE requirements for working on sewer water works shall include, at a minimum:

a). Rubber boots; goggles & face shields; latex gloves

b). If breaking lines, need protective gloves over latex gloves;

c). HEPA respirator; impermeable clothing, as needed.

37.2. Sodium hypochlorite shall be used for equipment wash down.

37.3. Hepatitis B shots are available for all employees who work on sewer systems.

37.4. Practice Universal Precautions at all times.

37.5. [Energy Supply Bloodborne Pathogens Program](#) and [Energy Supply Personal Protective Equipment Program](#) shall be referred to.

37.6. ALL exposures shall be reported.

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38. **SCAFFOLDING**

38.1. Refer to [Energy Supply Scaffolding Program](#). Scaffolds shall be tagged, according to the program, at all times.

38.2. Scaffolds shall be designed by a competent person. Scaffold erection shall be done under supervision of a competent person.

38.3. The scaffold must be inspected by a competent person prior to each work shift and after any incident which could alter the scaffold's safety.

38.4. Scaffold users must be qualified.

39. **STACK SAFETY**

39.1. When it is necessary to climb the stack to work, a second employee shall be assigned to assist the person doing the job.

39.2. Employees with a physical condition which might prevent them from performing a stack-related function safely shall notify their supervisor of that physical condition.

39.3. Communication shall be maintained between all parties and the station control room.

39.4. Appropriate personal protective equipment, including gas monitoring equipment, shall be assessed prior to ascending the stack, and shall be utilized at all times.

39.5. Temperature extremes shall be assessed, and work/rest cycles planned accordingly, utilizing personal controls as well as the Energy Supply Heat Stress Guidelines contained in this document.

39.6. 100% fall protection is required at all times.

40. **SUBSTATION**

40.1. Only authorized employees or authorized visitors may enter a substation.

40.2. Upon entering a substation where other workers are present, report your presence to the person in charge in order to exchange information on special system conditions affecting employee safety.

40.3. New employees and those not familiar with the hazardous conditions inherent in a substation shall be given special instructions before they are permitted to enter.

40.4. Employees who enter substations shall wear an approved hard hat and approved eye protection.

40.5. When working in an energized substation, gates shall be kept closed and latched.

40.6. Substation keys shall be issued only to authorized persons.
40.7. Danger High Voltage signs shall be permanently displayed on the fence on all sides of the substation. Damage to fences shall be reported immediately to any supervisor.

40.8. No parking shall be allowed within the substation unless required for work purposes.

40.9. Those entering or working in an energized substation shall not carry anything on their shoulders.

40.10. Before driving a vehicle into a substation, employees shall check clearances between protruding parts of the vehicle and the substation equipment.

40.11. No materials or equipment shall be stored under energized buses, lines or near energized equipment.

40.12. When leaving a substation, employees shall lock all doors, control houses and outside gates and check to be sure everything is secure and in proper order. Consideration shall be given to eliminating conditions, which might attract unauthorized entry.

40.13. Vehicles should not be driven over wire troughs.

40.14. Barriers shall be used to warn of hazards adjacent to the work area.

40.15. Fences around substations shall be bonded and grounded.

41. **TOOLS**

41.1. Tools, Stationary, Power Tools

   a. Appropriate personal protective equipment shall be worn.

   b. Machine guards shall be properly installed and shall not be removed except for inspection or repairs. Powered tools shall only be operated with the guards in place.

   c. Stationary powered tools shall be secured to prevent movement.

   d. A mechanical shifter shall be used to shift a belt in operation.

   e. Correct belt dressing shall be used and applied only after the machine is turned OFF and the belt idle.

   f. A brush or other safe method shall be used to clean chips away from the machine.

   g. Clamps shall be used to hold work in a drill press.

   h. Chuck wrenches shall be removed from the machine immediately after use. Prior to machine operation a check shall be made to insure the chuck wrench has been removed and machine is clear and ready for use.

   i. Remote disconnect switches or circuit breakers shall be clearly identified and marked as to their purpose.

   j. No gauging or calipering shall be attempted while the machine is in operation.
k. The tool rest shall have a maximum clearance of one-eighth of an inch from the wheel. The distance between the tongue guard and the wheel shall not exceed one-fourth of an inch.

l. The manufacturer’s recommended wheel speed shall not be exceeded.

m. Side grinding shall be performed only with wheels designed for this purpose.

n. Grinding wheels shall be run at operating speeds for at least one minute before work is applied. Wheels shall be dressed as necessary to prevent vibration.

o. Wheels shall be "ring tested" and inspected for chips and cracks before mounting. Wheels shall not be forced onto the spindle.

p. The work shall not be forced against a cold wheel, but shall be applied gradually until the wheel is warm. The work shall be held firmly against the tool rest.

41.2. Tools, Hand Tools

a. All tools, regardless of ownership, shall be of an approved type and maintained in good condition. Tools shall be inspected by user prior to each use. Any employee has the authority to condemn unsafe tools.

b. Defective tools shall be tagged to prevent their use and shall be either repaired or disposed of.

c. Any faulty or defective tool or equipment shall not be used. A Repair tag shall be attached to the tool or equipment and a report shall be made to the supervisor or person in charge.

d. Tools shall be used only for the purpose for which they were designed.

e. Hammers with metal handles, screwdrivers with metal continuing through the handle and metallic measuring tapes shall not be used on or near energized conductors or equipment.

f. Tools shall not be thrown from place to place or from person to person. Tools that must be raised or lowered from one elevation to another shall be placed in tool buckets or firmly attached to hand lines.

g. Tools shall not be left unsecured on scaffolds, platforms, or other elevated places where their falling could endanger employees below.

h. Impact tools such as chisels, punches, drift pins and hammers, that become worn, mushroomed, or cracked, shall be dressed before further use or replaced.

i. Sharp-edged tools shall be kept sharpened.

j. Hand tools shall be used in such a way as to prevent injury in case of a slip.

k. Chisels, drills, punches, ground rods and pipe shall be held with suitable holders or tongs, not with the hands, while being struck by another employee.
l. Wrenches with sprung or damaged jaws shall not be used. Adjustable wrenches shall be pulled so force is applied to the side of the fixed jaw.

m. Only approved extensions shall be used for added leverage.

n. Only wrenches designed for the purpose shall be struck.

o. Tools with sharp edges shall be stored and handled so they will not cause injury. They shall not be carried in pockets. All cutting tools shall be kept properly guarded.

p. Tool handles that are loose, cracked or splintered shall be replaced. Handles shall be kept clean of oil and grease.

q. When working on or above open grating, the grating shall be covered to prevent tools or parts from dropping to a lower level, and the danger area below shall be barricaded or guarded.

r. The insulation on non-rated hand tools shall not be depended upon to protect users from electric shock.

s. Files and rasps shall be used with handles. They shall not be used as a pry, nor shall they be struck.

41.3. Tools, Chain Saws

a. Approved personal protective equipment shall be worn when operating chain saws: hard hat, gloves, hearing protection, safety glasses, face shield, approved chaps or shin guards.

b. Saws shall have constant pressure switch.

c. The starter cord shall not be wrapped around the hand when starting the engine. Watch clearances and make sure of footing before pulling the cord.

d. Make sure everyone is in the clear and the operator has good footing before using the saw.

e. During refueling, smoking or open flames shall not be permitted in the area. The engine shall be stopped. A hot engine shall be allowed to cool before refueling.

f. While standing in an aerial basket, the saw shall be placed on the edge of the basket to start.

g. Saws shall be stored in carrying cases or the guard over the blade when not in use. A saw holder shall be used when carrying saws in aerial baskets.

41.4. Tools, Part Washers

a. Comply with all manufacturers’ operating instructions when using any parts washer. Interlock shall be functioning at all times, or parts washer shall be tagged “DO NOT OPERATE”.

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b. Do not reach inside a cabinet type washer with the turntable moving.

c. Keep the floor clean and dry around parts washers to reduce the risk of slipping or failing.

d. Never climb or stand on a parts washer.

e. Unplug or disconnect the parts washer from the power supply before attempting any maintenance. Refer to the Energy Supply Hazardous Energy Control Lockout Program or the Energy Supply Hazardous Energy Control Tagout Program.

f. Do not operate a parts washer if it is damaged, malfunctioning, partially disassembled, or has broken parts, including a damaged cord or plug.

g. Use only approved cleaning solutions in any parts washer.

h. Do not introduce toxic materials, solvents, or combustible materials with a flash point below 300 degrees into an automatic cabinet parts washer utilizing heated water or solvent for cleaning. Flash points of products may be found by referring to the SDS.

i. For cabinet type washers, allow heated parts time to cool before handling.

j. Open-type parts washers shall have a fusible link in place, which shall be operable at all times.

41.5. Tools, Pneumatic and Hydraulic Tools

a. Pneumatic and hydraulic tools shall be operated by properly trained persons.

b. When utilizing pneumatic and hydraulic tools, approved personal protective equipment shall be worn as required.

c. Tools shall not be operated at pressures exceeding manufacturers' specifications.

d. Pneumatic and hydraulic tools shall be used with care. They shall not be pointed at another person.

e. Pneumatic and hydraulic power tools shall be secured to the hose by a positive means to prevent the tool from becoming accidentally disconnected. Safety clips or retainers shall be securely installed and maintained on a pneumatic impact tool to prevent attachments from being accidentally expelled.

f. The hose shall not be kinked in order to stop the tool.

g. Chicago to Chicago fittings shall have clips as a safety.

h. Every selection of hose with a diameter less than one inch shall be secured with either a safety clip or a whip check of the appropriate size. Every section of hose with a diameter of one inch or greater shall be secured with a safety clip and a whip check of the appropriate size.

i. Before making adjustments or changing pneumatic tools, unless equipped with
quick-change connectors, the air shall be shut OFF at the air supply valve ahead of the hose. The hose shall be bled at the tool before breaking the connection.

j. Trigger guards shall be utilized to insure the trigger or control will not operate when the tool is laid down.

k. Conductive hoses shall not be used near energized equipment.

l. The air tank drain valve should be opened at regular intervals to prevent excessive moisture accumulation.

m. Safety relief valves are required on air tanks and shall be tested periodically to insure proper operating condition. Relief valves shall not be tied down.

n. The supply line should be shut OFF at the source before disconnecting the air hose.

o. Reducers or pressure relief devices shall be used to ensure that compressed air used for cleaning purposes is below 30 psi.

p. Compressed air shall not be used to blow dust and dirt from clothing or the body.

q. Manufacturers' stated safe-operating pressures for hoses, pipes, valves, filters and other fittings shall not be exceeded.

r. The use of hoses for hoisting or lowering tools is not permitted.

s. Proper tools shall be used to locate or stop leaks.

41.6. Tools, Portable Electric Tools

a. The non-current-carrying metal parts of a portable electric tool, such as drills, saws and grinders shall be effectively grounded when connected to a power source unless: (1) the tool is an approved double-insulated type, (2) the tool is connected to a ground fault interrupter, (3) connected by means of an isolating transformer, or (4) protected by an "assured grounding system."

b. All power tools shall be inspected prior to use to ensure safe operation.

c. Power tools shall be used only within their design capability and shall be operated in accordance with the instructions of the manufacturer.

d. All tools shall be kept in good repair and shall be disconnected from the power source while repairs or adjustments are made.

e. Electric tools shall not be used where there is a hazard of flammable vapors, gases or dust.

f. All tools or cords shall be disconnected by grasping the plug, not the cord. Extension cords shall be maintained in good repair. Cords for power tool use shall be of the three-wire ground type. Extension lamp cords shall have guards and shall not be used for tool operations. Tools should not be lifted or lowered by the cord.
g. Ground fault interrupters shall be used when an electric tool is used under damp conditions or in an enclosed vessel.

41.7. Tools, Powder Activated Tools

a. Only those employees who are qualified to use powder activated tools shall do so.

b. Powder Activated tools shall be double activated.

c. Explosive charges shall be carried and transported in approved containers.

d. Operators and assistants using these tools shall wear eye protection (safety goggles and/or face shield) and a hard hat.

e. Tools shall be maintained in good condition and serviced regularly.

f. This equipment shall be used only upon approved materials. Operators should know the construction and composition of materials the tool is being used upon.

g. Prior to use, the operator shall ensure that the protective shield is properly attached to the tool.

h. The operator shall inspect the tool to be sure that it is clean, moving parts operate freely and the bore is free from obstructions. The bore shall be cleared before using. A charge shall not be fired to clear the bore.

i. A defective tool shall be tagged with a Repair tag and immediately removed from service.

j. Powder activated tools shall not be used in an explosive or flammable atmosphere.

k. Tools shall not be loaded until just prior to the intended firing. Tools shall be unloaded immediately when work is suspended.

l. Only cartridges with an explosive charge adequate for the job and with proper penetration shall be used.

m. Tools and cartridges shall not be left unattended.

n. Tools, loaded or unloaded, shall not be pointed at any person.

o. Tools shall be held perpendicular to the work surface.

p. In case of a misfire, the operator shall hold the tool in place for 30 seconds. The operator shall then try to operate the tool a second time, and, if unsuccessful, shall wait another 30 seconds. Misfired cartridges shall then be removed, placed in metal container and returned to the supervisor.

q. Prior to firing a powder-activated tool, warning shall be given.

41.8. Tools, Live-Line Tools
a. Each live-line tool shall be wiped clean using a silicone wiping cloth and visually inspected for defects before use each day.

b. If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and examined and tested.

c. Live-line tools used for primary employee protection shall be removed from service every two years for examination, cleaning, repair, and testing as follows:

1). Each tool shall be thoroughly examined for defects.

2). If a defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is found, the tool shall be repaired and refinished or shall be permanently removed from service.

3). If no such defect or contamination is found, the tool shall be cleaned and waxed.

d. Live-line tools shall not be painted.

41.9. Impact Sockets and Hydraulic Tools:

In order to minimize socket failure and increase safety, the following shall be followed:

a. Only trained and qualified employees shall operate hydraulic torqueing tools.

b. Energy Supply's socket inventory shall be evaluated as to "wear and tear".

1). Prior to each use, the user shall visually inspect each socket, including checks for cracking, socket hex face condition, square drive condition, appearance of rolled metal, or exposure to extreme heat.

2). Prior to placing back into inventory, the tool analyst shall visually inspect each socket, including checks for cracking, socket hex face condition, square drive condition, appearance of rolled metal, or exposure to extreme heat.

3). Questionable or worn sockets shall be tagged and returned to the toolroom for appropriate disposal.

c. Never use a chrome or non-impact type socket on any impact type wrench, gun or hydraulic machine with the exception of manually operated wrenches.

d. Always use an approved securing device such as a rubber snap ring, etc. to secure socket to tools as per manufacturer specifications.

e. Sockets shall not be modified in any way to include, machining, grinding, welding, etc.

f. Pre-job Briefings shall be held with all personnel to reinforce all safety issues, especially proper reaction arm adjustment, pinch points and safe work zone.

g. Hydraulic Torqueing Systems:
1). Only ANSI or ASME approved impact sockets shall be purchased for use with hydraulic torqueing systems.

2). These sockets shall be clearly identified and kept separate for hydraulic torqueing system use only. These sockets are not be used with impact wrenches or other tools.

3). Each hydraulic torqueing systems socket shall be inspected and tested annually per approved procedure. Any questionable or worn sockets shall be discarded.

42. **TRENCHING AND EXCAVATION**

Refer to Energy Supply Trenching and Excavation Policy.

43. **TUNNELS**

43.1. Entry into tunnels shall be under the provisions of Energy Supply Confined Space Program.

43.2. Before anyone is allowed to enter a tunnel, its chlorination system shall be completely shut down, isolated and properly tagged.

43.3. Before entering the tunnel, a check shall be made for hydrogen sulfide with an approved detector. Employees shall not work in concentrations of hydrogen sulfide above ten parts per million.

43.4. Before employees are allowed to enter a tunnel, the butterfly valve at the condenser inlet shall be opened.

43.5. The tunnel shall be force-ventilated as long as employees are in the tunnel.

43.6. When cleaning or inspecting a tunnel, there shall be a minimum of three employees present. One employee shall remain on top at the entrance, while two enter the tunnel.

43.7. An approved personnel lifting device shall be stationed at the tunnel entrance at all times during the cleaning operations. Entrants shall wear approved full body rescue harness while in the tunnel.

43.8. When cleaning a tunnel, eye protection, rubber boots, work gloves, hard hat and long-sleeve shirt or rain jacket shall be worn.

43.9. Only 12 volt low voltage lighting systems shall be used.

44. **TURBINES**

44.1. General

   a. Entry into turbines shall be under the provisions of the Energy Supply Confined Space Program.

   b. Proper switching and tagging clearance, in accordance with the Energy Supply
Hazardous Energy Control Lockout Program or the Energy Supply Hazardous Energy Control Tagout Program shall be obtained before work is begun on turbines.

44.2. Condenser

a. Entry into a condenser water box shall be under the provisions of the Energy Supply Confined Space Program.

b. Before starting any work in a condenser, proper clearance shall be obtained in accordance with the Energy Supply Hazardous Energy Control Lockout Program or the Energy Supply Hazardous Energy Control Tagout Program.

c. Extreme caution shall be used when opening the water box to determine that the water box has been drained.

d. The atmosphere within the condenser shall be retested at least once each hour as long as work is being performed.

e. No one shall work in an atmosphere that exceeds allowable limits of ten parts per million hydrogen sulfide.

f. No one shall work in a condenser water box into which plugs are being blown. The access door on the water box into which the plugs are being blown shall be closed, or adequately blocked to prevent plugs from escaping.

g. Only 12 volt low voltage lighting systems shall be used.

44.3. Screenwell

a. Entry into screenwells shall be under the provisions of the Energy Supply Confined Space Program.

b. Before anyone is allowed to enter the screenwell, its chlorination system shall be completely shut down, isolated and properly tagged.

c. Before entering a well, a check for hydrogen sulfide shall be made at the opening and every five feet to the bottom. Additional tests shall be made at various areas at the bottom, such as around the screen pump impeller and corners.

d. When descending or ascending the screenwell ladders, employees shall wear a full body harness with lifeline attached. Lifeline shall be played out or taken up as necessary to prevent slack in the line. Portable ladders shall be tied off to prevent slipping.

e. When covers and deck plates are removed, barriers shall be installed around open areas. Reference Section 2, Barriers.

f. When employees are working in the screenwell, a full body rescue harness shall be worn.

g. When employees are working in the well, an attendant shall be stationed at topside at all times.
Submersible pumps shall be checked for proper grounding before use.

When cleaning screenwells, the approved personal protective equipment shall be worn.

Only 12 volt low voltage lighting systems shall be used.

Prior to a ship or barge docking or departing from the dock adjacent to the screenwell, all employees shall be evacuated from the screenwell.

Extra precautions shall be exercised due to wet, slippery conditions in the screenwell.

**45. VEHICLE OPERATION**

45.1. Employees operating motor vehicles shall be properly licensed. Employees shall operate vehicles in accordance with Company rules and principles of defensive driving.

45.2. Only authorized persons shall be permitted to operate Company vehicles or equipment.

45.3. Operators shall familiarize themselves with and shall obey all state and local traffic laws and ordinances.

45.4. Unauthorized persons shall not be permitted to ride in Company vehicles unless permission is granted by the supervisor.

45.5. Where seat belts and shoulder harnesses are provided, they shall be used.

45.6. Employees shall ride only in the passenger compartment provided in trucks for their transportation. The maximum number of passengers in a truck is equal to the number of seatbelts in that truck.

45.7. Internal combustion engines shall not be operated within closed garages or other buildings where adequate ventilation is not provided.

45.8. Employees shall not operate an unsafe vehicle or equipment. Unsafe vehicles or equipment shall be removed from operation and reported promptly.

45.9. Trucks shall not be operated with tailboards hanging loose, or with tool compartment doors open.

45.10. Where visibility is obscured and sufficient personnel are available, a flagman shall be placed at the rear of the vehicle being backed. The flagman shall be positioned in such a manner as to see the area to the rear of the vehicle and be seen by the operator. The operator shall obey signals given by the flagman.

45.11. Where visibility is obscured operators shall walk around the vehicle before moving it to make sure everything is in the clear.

45.12. Operators should park or plan routes so as to avoid backing whenever practical.

45.13. Any unusual loads or any necessary overload shall be handled in compliance with state and local laws or ordinances.
45.14. When loading vehicles, care shall be taken to balance or distribute the load as equally as practical.

45.15. When loading or unloading, vehicles shall be placed in PARK position and brakes shall be set, or the wheels shall be chocked.

45.16. Vehicles should not be parked closer than eight feet to any railroad track.

45.17. Unless otherwise posted, the speed limit on Company property is ten miles per hour.

45.18. Operators shall consider overhead clearances.

45.19. Employees should not board or get off of a moving vehicle.

45.20. Doors shall be opened carefully to avoid striking people, objects, or other vehicles. Caution shall be exercised when opening doors on the street side of a vehicle.

45.21. Loads extending four feet or more beyond the body of the vehicle shall have an orange warning flag attached.

45.22. In attaching trailers, the safety latch on the pintle hook shall be closed and locked.

45.23. All trucks hauling poles or pole trailers shall be driven with extreme caution because of the overhang.

45.24. Adequate advanced warning shall be given to all traffic before attempting to turn with a load that projects over five feet beyond the end of the truck or trailer.

45.25. Equipment and materials carried on or in trailers shall be properly secured and the weight evenly distributed.

45.26. No one shall be permitted to ride on a trailer unless directed to do so.

45.27. "Micro Brakes" on vehicles shall not be used to hold vehicles on sloping grades.

45.28. Employees shall comply with all applicable DOT regulations when transporting hazardous materials. Only DOT qualified employees may transport, manifest, load or unload hazardous materials.

45.29. Unattended vehicles shall not be left running, unless the engine is needed to power auxiliary equipment.

45.30. Registered GVW (Gross Vehicle Weight) shall not be exceeded.

45.31. All cellular phone use while operating vehicles and equipment on Energy Supply Properties is prohibited. These properties include Big Bend Station and property, Polk Power Station and property, Bayside Station and property, and the Causeway Facility.

45.32. When on public roads in the course of company business, only hands-free cellular phone or devices may be used while operating vehicles.

45.33. Composing or reading text, e-mail, or other messages while operating a vehicle or
equipment anywhere in the course of company business is prohibited.

45.34. Use of radios and PGS Nextel “push to talk” devices while operating vehicles and equipment is prohibited on Energy Supply Property, unless the communication is necessary for the task being performed; such as to communicate with a spotter, or a crane operator communicating with a rigger, etc.

45.35. When an unlicensed motor vehicle/equipment is traveling for any distance on a public road, the driver/operator of that equipment must hold a valid US driver's license.

45.36. When unlicensed motor vehicles/equipment are traveling for any distance on a public road, the vehicle should have brake lights, however, if the vehicle does not have brake lights, it is acceptable for the vehicle to be followed and escorted by a vehicle with working brake lights.

45.37. When unlicensed motor vehicles/equipment are traveling for any distance on a public road in the dark, the vehicle should have headlights, however if the vehicle does not have headlights, it is acceptable for the vehicle to be preceded and escorted by a vehicle with working headlights in use.

45.38. Unlicensed motor vehicles/equipment (not including golf carts) directly crossing public roads are not considered travel on the road.

46. VIOLENCE PREVENTION

46.1. Personal firearms, explosives or other dangerous weapons shall not be carried by anyone in the workplace or in Company vehicles.

46.2. Harassment or threats shall not be tolerated.

46.3. Threats or acts of violence on Company property shall be immediately reported to supervisor and/or the Security Department. Such acts off Company property shall be immediately reported to law enforcement, supervisors and Security Department.

46.4. Intimidation, horseplay, scuffling, practical jokes or similar activities are not permitted.

47. WARNING SIGNS, BARRIERS & BARRICADE TAPE (WORK AREA PROTECTION)

47.1. Employees shall heed warning signs. Where hazardous conditions exist, barricades, barriers and/or warning signs, (such as tape, cones, and flashing lights) shall be used to warn employees and the public of the dangers. Instruction in the installation of work area protection devices is provided in the Energy Supply Work Area Protection Program.

48. WORK ON PUBLIC ROADS

48.1. As much advance warning shall be given as practical. Signs, and in some cases lights, shall be placed well in advance of the work area to allow the motorist time to adjust to upcoming conditions in accordance with approved standards.

48.2. All signs shall be located on the side of the roadway and maintained at right angles to, and facing, oncoming traffic.
48.3. Only approved warning devices shall be used. The Workers Ahead signs shall be equipped with orange flags for better visibility.

48.4. Signs shall be removed when the work has been completed. If work is temporarily suspended, signs should be covered or removed.

48.5. When work area is adjacent to, or encroaches upon, a lane of traffic, traffic cones shall be used as delineators to channel traffic away from the work area. The taper shall be long enough so vehicles approaching the restriction have sufficient distance in which to adjust their respective speeds and merge to a single lane before the end of the transition.

48.6. Every effort shall be made to move traffic around the work area as safely and expeditiously as possible. If there is enough room for two vehicles to pass each other, cones shall be used to divide the space into two lanes. If there is only room for one-way traffic, the entire lane shall be blocked off.

48.7. In congested areas where there is heavy traffic, it may be necessary to designate a member of the crew as flagman. The flagman shall wear an orange vest and carry a red flag or approved paddle.

48.8. Under extremely heavy traffic conditions, a second flagman may be required. Each flagman shall be able to see the other clearly so as to coordinate their signals.

48.9. In a more congested area, where vehicles are parked in designated parking spaces at the curb, a Workers Ahead sign shall be placed at an appropriate distance to the rear of the truck. A cone and flag shall be placed immediately behind the truck.

48.10. Warning lights shall be used after dark. Steady-burning lights or reflective cone collars shall be used on delineators to channel traffic. Flashing lights shall be used as advance warning and shall be attached to the very first sign as the motorist approaches the work area.

48.11. The rotating light on the truck shall be used at night as well as daytime when conditions warrant it.

48.12. The flashing arrow board shall be used well in advance of the work area on interstate and other high-speed highways.

48.13. Work area protection shall be installed along sidewalks where pedestrians may encroach upon the work area. Added protection is recommended in high-density downtown areas.

49. **DEFINITIONS:**

**Aerial Lift Device** - Any piece of equipment utilizing a bucket, basket or platform to place the worker(s) at an elevated worksite.

**Affected Employee** - An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.
**Alive, Live** - Electrically connected to a source of potential difference or electrically charged so as to have a potential significantly different from that of earth or ground potential. The term also means "current carrying."

**Anchorage** - A secure means of attachment for lifelines, lanyards, and straps. Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall 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.


**Approved** - When used in connection with methods, tools, or equipment, refers to the methods, tools, or equipment approved by the Company through committee, departmental action, or safety rule.

**Assured Grounding System** - An equipment grounding program covering all cord sets, any equipment connected by cord sets and receptacles which are not a part of a building or structure. This program includes regular inspections and continuity tests to ensure that there is no damage, defects, deformed or missing parts that would render the device or equipment unsafe.

**Attendant** - An employee assigned to remain immediately outside the entrance to an enclosed or permit-required confined space to render assistance as needed to entrants inside the space.

**Automatic Circuit Recloser** - A self-controlled device for interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing.

**Authorized Person** - One who has the authority to perform specific duties under certain conditions or who is carrying out orders from responsible authority and who is knowledgeable in the construction and operation of the equipment and the hazards involved.

**Backfeed** - To energize a section of a circuit, or a section of a power network that is supplied from a source other than its normal source. As an intended or planned work procedure, this can be done in a safe manner. When this occurs (where a circuit or section of power network is supplied from a source other than its normal source) and it is unexpected or unintended, an extremely hazardous condition can occur, for example, when a customer’s portable generator is connected to circuits that have not been isolated from the Company’s service and distribution lines.

*Note:* A hazardous backfeed condition can occur on lines and equipment through interconnections on transformer banks.

**Barricade** - Materials such as tapes, cones, or A-frame type wood or metal structures intended to provide a warning about a hazardous area and to limit access to it.

**Barrier** - A physical obstruction which is intended to prevent contact with energized lines or equipment or to prevent unauthorized access to a work area or restricted area.

**Basket** - One component of the bucket truck and is the enclosure in which the employee stands and works aloft.
**Benching, Benching System** - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

**Body Belt, Safety Belt** - A strap that both secures around the waist and attaches to a lanyard, lifeline, or strap.

**Body Harness** - Straps that are secured about an employee in a manner that distributes the arresting forces over at least the thighs, shoulders, and pelvis with provisions for attaching a lanyard, lifeline, or deceleration device.

**Bond** - The electrical interconnection of conductive parts designed to maintain a common electrical potential.

**Bucket Truck** - An aerial lift and includes the entire piece of equipment: the truck, auxiliary power supply, upper boom, lower boom, controls, etc.

**Bus** - A conductor or a group of conductors that serve as a common connection for two or more circuits.

**Bushing** - An insulating structure, including a through conductor or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purpose of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

**Cable** - A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).

**Cable Sheath** - A conductive protective covering applied to cables. A cable sheath may consist of multiple layers of which one or more is conductive.

**Carboy Tilter** - A large plastic or glass bottle or container in a supporting frame used to safely control and pour liquids.

**Catastrophic Release** - A major uncontrolled emission, fire, or explosion involving one or more highly hazardous chemicals that presents serious danger to employees.

**Chemical** - Acids, caustics, solvents and other materials and substances used in the plants and within the Company.

**Circuit** - A conductor or system of conductors through which an electric current is intended to flow.

**Class D Grade Air** - Specification for compressed air for industrial breathing and fire fighting uses (as per ANSUCGA G. 1): percent oxygen: 19.5-3.5; carbon monoxide: < 10 ppm; oil (hydrocarbons): < 5 mg/m 3 carbon dioxide: < 1000 ppm; odor: none.

**Clear Hot Stick Distance** - The minimum distance for the use of live-line tools held by employees when performing live-line work.

**Clearance (For Work)** - Authorization to perform specified work or permission to enter a restricted
area or notification given that lines or equipment have been isolated from all known feed points and that the necessary switching and tagging has been completed.

**Clearance (Between Objects)** - The clear distance between two objects measured surface to surface.

**Combustible Liquids** - Any liquid having a flash point at or higher than 140°F and less than 200°F.

**Competent Person** - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Communication Lines** - The conductors and their supporting or containing structures that are used for public or private signal or communication service. Telephone, telegraph, railroad signal, data, clock, fire, police-alarm, community television antenna, and other similar systems are included.

**Conductor** - A material, usually in the form of a wire, cable, or bus bar, used for carrying an electric current.

**Confined Space** - A working space such as a transformer, tank, vessel, boiler, hopper or pit etc., that is large enough and so confined that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit and is not designed for continuous human occupancy under normal operating conditions, meet the definition of a confined space. Spaces that meet this definition and contain a hazardous atmosphere or other recognized serious safety hazards (i.e. engulfment, entrapment, etc.) and may only be entered in accordance with the Energy Supply Confined Space Program. Similarly, enclosed spaces that cannot be safely entered must be entered under the Energy Supply Confined Spaces Program.

**Covered Conductor** - A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.

**Current-Carrying Part** - A conducting part intended to be connected in an electric circuit to a source of voltage. Noncurrent-carrying parts are those not intended to be so connected.

**De-Energized** - Free from any electrical connection to a source of potential difference and from electric charge; not having a potential different from that of the earth. The term is used only with reference to current-carrying parts, which are sometimes energized (alive).

**Designated Person** - An employee (or person) who is designated to perform specific duties and who is knowledgeable in the construction and operation of the equipment and the hazards involved. See Authorized Person.

**Disconnected** - Disconnected from any electrical source of supply

**Effectively Grounded** - Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages that may result in undue hazard to connected equipment or to persons.

**Emergency** - An emergency occurs when an unusual condition exists that endangers life and/or
Employee - A general reference to those personnel performing work or a task that are employed by the Company. Depending upon circumstances, this can also include temporary workers, contractor's workers or others.

Enclosed - Surrounded by a case, cage, or fence, which will protect the contained equipment and prevent accidental contact of a person with live parts.

Enclosed Space - A working space, such as manhole, vault, tunnel, or shaft that has a limited means of egress or entry, that is designed for periodic entry under operating conditions, and that under normal conditions does not contain a hazardous atmosphere, but that may contain a hazardous atmosphere under abnormal conditions.

Energized (Alive, Live) - Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.

Energy Isolating Device - A physical device that prevents the transmission or release of energy, including, but not limited to, the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.

Energy Source - Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to personnel.

Ergonomics - Founded in applied science, this is a process that focuses on human capabilities and limitations in the design of workstations, jobs, tools and equipment. The goal of ergonomics is to reduce or eliminate stressful body movements.

Excavations - Any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

Exposed - Not isolated or guarded. A bare condition applied to objects not guarded or insulated.

Fall Prevention System - (prevents fall from one level to another) A system intended to prevent a worker from falling from one elevation to another. Such systems include positioning devices, guardrail, barriers, and restraint systems.

First Aid Providers - Employees designated and trained to provide immediate care for injury or sudden illness until medical help arrives or medical help is obtained.

Flammable Liquid - Any liquid having a flash point less than 140°F and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100°F.

FR - Fire resistant or fire retardant.

Free-Fall - The act of falling before the personal fall protection system begins to arrest the fall.

Ground (Noun) - A conducting connection, whether intentional or accidental, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.
Ground (Verb) - Connecting or establishing a connection, either intentionally or accidentally, of an electric circuit or equipment to reference ground. Connect to earth or some conducting body that serves in place of earth.

Ground Cluster, Set - A one-piece apparatus designed to ground two and three phase lines. This device must be installed with a hot stick.

Grounded - Connected to earth or to some conducting body that serves in place of the earth.

Grounded System - A system of conductors in which at least one conductor or point (usually the middle wire or neutral point of transformer or generator winding) is intentionally grounded, either solidly or through a current limiting device (not a current-interrupting device).

Grounding Electrode, Ground Electrode - A conductor embedded in the earth, used for maintaining ground potential on conductors connected to it and for dissipating into the earth current conducted to it.

Guarded - Protected by personnel, or covered, fenced, or enclosed by means of suitable casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects. Wires that are insulated but not otherwise protected are not considered guarded.

Hazardous Atmosphere - Means an atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a confined or enclosed space), injury, or acute illness from one or more of the following causes:

1). Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

2). Airborne combustible dust at a concentration that meets or exceeds its LFL;

Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.

1). Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

2). Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control., or in Subpart Z of 29 CFR 1910, Toxic and Hazardous Substances, which could result in employee exposure in excess of its dose or permissible exposure limit;

Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, and impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

1). Any other atmospheric condition that is immediately dangerous to life or health.

Note: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the Hazard Communication Standard, 29 CFR 1910.1200, published information, and internal documents can
provide guidance in establishing acceptable atmospheric conditions.

**Hazard Communication Program** - Company program to ensure that information concerning hazardous chemicals (material) is transmitted to employees through the use of warnings, procedures, Safety Data Sheets, and employee training.

**Hazardous Material (Substances)** - Any substance that is a physical hazard or a health hazard. A substance is a physical hazard when there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive. The substance is a health hazard when it is determined to be a carcinogen, a toxic or highly toxic agent, a reproductive toxin, irritant, corrosive, sensitizer, hepatotoxic, nephrotoxic, neurotoxin, an agent that acts on the hematopoietic system, or an agent that damages the lungs, skin, eyes, or mucous membranes.

**Highly Hazardous Chemical** - A substance possessing toxic, reactive, flammable, or explosive properties.

**High Power Tests** - Tests in which fault currents, load currents, magnetizing currents, and line-dropping currents are used to test equipment, either at the equipment's rated voltage or at lower voltages.

**High Voltage Tests** - Tests in which voltages of approximately 1000 volts are used as a practical minimum in which the voltage source has sufficient energy to cause injury.

**High Wind** - A wind of such velocity that an employee would be exposed to being blown from elevated locations, an employee or material handling equipment could lose control of material being handled, or an employee could be exposed to other hazards. Winds exceeding 40 miles per hour or winds exceeding 30 MPH, if material handling is involved, are considered to be high winds unless precautions are taken to protect employees from the hazardous effects of the wind.

**Hot Work Permit** - An authorization to perform work involving electric or gas welding, cutting, brazing or similar flame or spark producing operations. The permit form is a written authorization certifying that certain safety precautions have been implemented prior to, during and after completion of work operations.

**Hydrometer** - An instrument for measuring the specific gravity of liquids.

**Immediately Dangerous To Life Or Health (IDLH)** - Means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit-required confined space.

**Induced Voltage** - The basic process of generating voltages and/or current requiring an electromagnetic field, a conductor and relative motion. This process occurs, in a practical manner, where an ungrounded conductor is in proximity to another energized (AC) conductor. The strength of the induced voltage varies directly with the distance (length) of the conductors, closeness to one another and amount of loading (current) on the energized (AC) conductor. Also can occur with electrical equipment situations and in conductive objects.

Whether a voltage is defined as being induced or generated is often simply a matter of point of view.
Note: Grounding to earth potential removes this potentially hazardous condition from occurring.

**Insulated** - Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.

Note: When any object is said to be insulated, it is understood to be insulated for the conditions to which it is normally subjected. Otherwise, it is, uninsulated.

**Insulation (Cable)** - That which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

**Lanyard** - A flexible line used to secure a body belt or body harness to a lifeline or directly to a point of anchorage.

**Lifeline** - A line provided for direct or indirect attachment to a worker’s body belt, body harness, lanyard, or deceleration device. Such lifelines may be horizontal or vertical in application.

**Live-Line Tools** - Those tools and ropes that are especially designed for work on energized high voltage lines and equipment. Insulated aerial equipment especially designed for work on energized high voltage lines and equipment shall be considered live-line.

**Manhole** - A subsurface enclosure, which personnel may enter, that is used for installing, operating, and maintaining equipment and/or cable.

**Manhole Opening** - An opening through which persons may enter into a confined or enclosed space.

**Minimum Approach Distance** - The closest distance an employee is permitted to approach an energized or a grounded object.

**Near Miss** - An unintended, unplanned, and unexpected event that could have, but did not result in personal injury or property damage.

**Pad Mount** - Transformer or equipment in a surface-mounted enclosure normally worked from ground level.

**PCBs (Polychlorinated Biphenyls)** - A nonconductive and noncombustible liquid used in some transformers and capacitors. It has several trade names - Pyranol, Askeral, Inerteen, etc.

**Personal Fall Arrest System** - a system used to capture an employee in a fall. It consists of an anchorage and connecting device and body wear.

**Personal Hygiene** - Habitual patterns and behaviors for any individual involving sanitary practices and cleanliness which are the principles for the preservation of health and the prevention of disease.

**Personal Protective Equipment** - Any safety material or safety device worn to protect an employee from exposure to, or contact with any harmful material or force and meets applicable ANSI standards.

**Person In Charge** - In a general sense, any person, regardless of classification, who is directly in charge of a specific job or jobs.
**Positioning Device** - A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical/horizontal surface such as a wall or pole and to work with both hands free.

**Primary Compartment** - A compartment containing voltages greater than 600 volts.

**Primary Voltage** - Any electrical circuit that normally operates at more than 600 volts.

**Process Area** - includes all areas where equipment supporting electric power generation is operating.

**Protective System** - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

**PSIA** - Pounds per square inch absolute. The absolute, thermodynamic pressure, measured by the number of pounds-force exerted on an area of 1 square inch.

**PSIG** - Pounds per square inch gauge. The gauge pressure, measured by the number of pounds-force exerted on an area of 1 square inch.

**Public** - Any individual not an employee or representative of the Company.

**Qualified Employee** - One who has demonstrated skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to identify and avoid the hazards involved. The determination as to whether an employee is qualified considers both experience and training.

**Qualified Person** - A qualified person is one who is specially qualified to do a particular job because of education, training and/or experiences.

**Reduced Visibility** - Times when normal visibility is reduced because of insufficient daylight (dawn or dusk) or adverse weather conditions such as fog or heavy rainfall.

**Registered Professional Engineer** - A person who is registered as a professional engineer in the state where the work is to be performed.

**Relay Vault** - A substation building structure used to house protection and control relay panels, annunciators, load centers, control cable junction boxes, battery banks and other electrical apparatuses (also known as a control house).

**Road** - The paved or unpaved surface of a roadway upon which vehicles are intended to travel. When the road is paved, the entire surface is thus included.

**Roadway** - The road and the areas immediately adjacent thereto, such as the shoulder of the road, parking strip, etc. This area normally extends approximately 15 feet from the road.

**Rope Grab** - A device that attaches to a lifeline as an anchoring point to provide a means for arresting a fall.

**Safety Can** - An approved closed container of not more than five-gallon capacity having a
flash-arresting screen, spring closing lid, and spout cover and designed so that it will safely relieve internal pressure when subjected to a fire.

**Safety Data Sheet (SDS)** - A document provided by manufacturers and importers of chemicals to convey information to the users of their products. The information includes data on physical characteristics, fire and explosion hazards, reactivity, and health hazards, special precautions, and fire and spill procedures.

**Safety Rule** - A positive rule requiring compliance by all employees concerned. Deviation from safety rules is not permitted and may be subject to disciplinary action.

**Secondary Compartment** - A compartment containing voltages less than 600 volts.

**Secondary Voltage** - Any electrical circuit that normally operates at less than 600 volts.

**Shall** - When the word "shall" appears in the wording of a rule, it defines the statement as a requirement or obligation to do something or have something take place. The rule is to be obeyed as written. A mandatory requirement.

**Shield, Shield System** - A structure that is able to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shield structures can be permanent or portable and moved along as work progresses.

**Shock Absorber** - Any of several devices for absorbing the forceful energy or impact of a sudden impulse or shock load upon an object or system.

**Shock Load** - A hazardous condition resulting from sudden energy or load transmittal with a forceful impact with often violent and potentially shattering effects.

**Shoring, Trenching & Shoring System** - A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

**Should** - When the word "should" appears in the wording of a rule, it defines the statement as a duty or expectation to do something or have something take place. Less stringent than "shall", it is used to indicate advisability or prudence as well as desirability, with the same meaning as "ought to" an advisory requirement.

**Note:** Where discretionary judgments are made in performance of an advisory rule, adequate measures shall be taken to ensure that an equivalent level of accident prevention is provided.

**Sign** - An openly displayed board, placard, etc. bearing information, warning or instructions. Accident prevention signs have standard signal words or symbols, legends and colors to convey a danger, warning, caution or notice.

**Sloping, Sloping System** - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surface loads.
Snap-Hook - A self-closing device with a keeper, latch, or other similar arrangement that will remain closed until manually opened. Such devices include self-closing, single-action, double-action, or double-locking snap-locks.

Step Bolt - A bolt or rung attached at intervals along a structural member and used for foot placement during climbing or standing.

Switch - A device for opening and closing or for changing the connection of a circuit. In this section, a switch is understood to be manually operable, unless otherwise stated.

Switching Operator - A qualified person designated to operate the system or its parts, the person actually doing the switching as ordered by the switching supervisor.

Switching Supervisor, System Operator - Person designated as having authority over switching and clearances of high-voltage lines and station equipment. The person under whose orders the switching is done.

Tag - An openly displayed card, ticket, plastic marker, etc. tied or securely attached to something as a label to give information, warning or instruction. Accident prevention tags have standard signal words, symbols and colors to convey a danger, warning, caution or information.

Tailboard Safety Talk - A short informal discussion of the work to be accomplished and the safety measures to be incorporated. Normally conducted by the person in charge, these discussions are sometimes referred to as tailgate talks, tool box talks, or five-minute safety talks.

Unauthorized employee/person -

Underground Residential Distribution (URD) - A general term that covers the necessary facilities to furnish underground service, generally to residential and commercial customers through buried cable.

Universal Precautions - The concept of universal precautions, as an approach to infection control, means that all human blood and certain human body fluids are treated as if known to be infectious for HIV (Human Immunodeficiency Virus), HBV (Hepatitis B Virus) and other bloodborne pathogens.

Unsafe Conditions - Used to indicate dangerous conditions, hazardous conditions, defective conditions, or unusual conditions that could be conducive to accidents.

Utilization Circuit - An electrical circuit and its associated equipment, which utilizes (uses) electric energy for mechanical, chemical, heating, lighting or similar useful purpose. (Specifically covered under OSHA Subpart S 1910.301-1910.399). Also, defined as any electrical circuit not a part of power generation, transmission and distribution installations, including related equipment for the purpose of communication or metering.

Vault - An enclosure, above or below ground, which personnel may enter and which is used for the purpose of installing, operating, or maintaining equipment or cable.

Vented Vault - A vault that has provision for air changes using exhaust flue stacks and low level air intakes operating on differentials of pressure and temperature providing for airflow which
prevents a hazardous atmosphere from developing,

**Voltage** - The effective potential difference between any two conductors or between a conductor and ground. The voltage specified in this manual shall mean the maximum effective voltage to which the personnel or protective equipment may be subjected. Low voltage includes voltages up to 600 volts. High voltage shall mean voltages in excess of 600 volts.

**Warning Signs** - Any sign or similar means of employee or public notification alerting them to an actual or possible hazard. Included are Danger signs, Caution signs, traffic protection signs, instructional signs, and informational signs.

**Work Area** - That area in which all work activities and equipment are confined.

**Work Area Protection** - A system of directing and controlling traffic so as to: (1) prevent injury to our employees whose work area is adjacent to or encroaches upon one or more lanes or traffic; and (2) to prevent injury to the motorist who is forced quite suddenly sometimes to adjust to unexpected road conditions.