Georgia Power

POWER GENERATION DEPARTMENT

VOGTLE ELECTRIC GENERATING PLANT

# TRAINING LESSON PLAN

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| TITLE: | INDUSTRIAL SAFETY ORIENTATION | NUMBER: | GE-LP-020.C |
| PROGRAM: | GENERAL EMPLOYEE TRAINING | REVISION: | 0 |
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REFERENCES:

VEGP PROCEDURE NOS. 00251-C, 00254-C, 00256-C, 00258-C, 00259-C, 00262-C, 00304-C

Containment R.G. 1.39 1 D

## INSTRUCTOR GUIDELINES:

1. LESSON PRESENTATION - 90 MINUTE LECTURE

2. MATERIALS REQUIRED: OVERHEAD PROJECTOR, TRANSPARENCIES, SLIDES, SLIDE PROJECTOR, AND STUDENT HANDOUTS.

# I. PURPOSE STATEMENT:

TO PROVIDE PERSONNEL WITH THE POLICIES AND GUIDELINES OF THE INDUSTRIAL SAFETY PROGRAM.

# II. LIST OF OBJECTIVES:

This lesson is designed to enable the trainee to:

1. Identify the following policies as they relate to individual responsibilities in support of the Safety Program:

   a. Ear Protection
   b. Hard Hat
   c. Safety Glasses
   d. Respiratory Protection (Dust Masks)
   e. Chemical Handling
   f. Spill
   g. Safety Harness

2. Identify the Safety Program requirements regarding the following:

   a. Report injuries
   b. Medical assistance available
   c. Clothing and jewelry hazards
   d. Housekeeping
   e. Protective tagging
   f. Closed vessel entry
   g. Smoking, eating and drinking policy

3. Identify the primary responsibilities of the Safety Department and individual workers in the enforcement of Safety Rules and Policies.

# III. LESSON OUTLINE:

## NOTES

I. INTRODUCTION

Georgia Power Company is committed to providing all employees with a safe place to work. This commitment is met only through the combined efforts of all employees and the Company.

The information provided in this lesson will instruct employees in the activities that are necessary to maintain an effective safety program, thereby enhancing the quality of the work environment and the safe operations of VEGP.

A. Personal Protective Equipment (Eye, Ear, Head and Feet Protection)

Safety glasses are provided by the company.

1. All individuals within the fenced-in security area of the plant shall wear safety glasses, proper working shoes, and hard hats while traveling from place to place or working except in the following places:

- They must be either prescription glasses or meet OSHA standards for impact and shatter resistance.

   a. Control Room
   b. Office areas
   c. Warehouse (designated areas only)
   d. Maintenance Building (designated areas require protection)
   e. Service Building
   f. Simulator/Training Building
   g. Administration Building
   h. Travel to and from plant entry and security building
   i. Areas requiring a RWP
   j. Fuel Handling Areas

Ear protection provided by the company in the form of ear plugs or ear muffs.

Proper working shoes - leather working type shoe (excludes tennis and/or jogging type shoes).

2. Individuals shall wear ear protection in areas so designated. (High noise areas)

3. Dust masks may be necessary and will be provided in areas where necessary to protect against inhalation of dust and other particles.

4. Evaluate work to be done to determine if safety belts, harnesses, face shields, etc., are needed. If so obtain them from supervision, tool rooms or warehouses and use them properly.

5. Proper Dress

   a. Shirts with buttons must be buttoned
   b. Tank tops, mesh shirts and short pants are prohibited

# III. LESSON OUTLINE:

## NOTES

6. It is the responsibility of the Plant Manager and all supervisory personnel to enforce the use of prescribed personnel safety equipment and the responsibility of all personnel to adhere to safety procedures and practices.

B. Reporting Injuries

1. All injuries that occur on plant site shall be reported immediately to the immediate supervisor.

   a. All reported injuries (minor, major) will be documented on Form 907.
   b. If medical attention is required a WC1 (Worker's Compensation Form 1) will be completed in addition to Form 907.

   The forms are available in the Health and Safety office. Upon completion of the forms, they should be returned to the Health-Safety supervisor.

All supervisors should have copies of each type of form and should be able to assist employees in completing the form or forms, whenever an injury is reported.

2. For proper treatment, all injuries should be reported to First Aid for proper treatment. Emergency phone numbers: First aid - ext. 7300 or 3595.

C. Medical Assistance Available

1. Individuals trained in administering first aid to treat minor injuries, mishaps or ailments that are incurred by employees while on plant site are available.

2. Major injuries, mishaps or ailments incurred by individuals requiring treatment beyond first aid will be transported to the nearest medical facility for treatment once the injury has been checked by First Aid.

D. Housekeeping

1. Activities that are required of all employees to maintain plant areas and environments to prescribed cleanliness, fire protection, and safety requirements to prevent degradation of a quality work atmosphere and the enhancement of the safe operations of the plant.

# III. LESSON OUTLINE:

## NOTES

a. Clean-up - Proper discarding of trash, debris, spills, litter and tools generated by performing a work task are the responsibility of the individuals performing the task. The task is not complete until the work area is clean. Walkways and work areas are to be kept free of tripping hazards with materials orderly placed out of the way and scraps disposed of properly.

b. Decontamination - Those tasks performed to reduce the levels of contamination of personnel, equipment, and specific areas.

Work Task Maintenance testing or operations which require extra materials to be carried into an area such that trash debris or litter is generated.

E. Smoking, Eating, and Drinking Policy

1. In all cafeterias, breakrooms, office spaces, and other areas specially identified for these purposes by posted notices, SMOKING, EATING and DRINKING are ALLOWED.

2. In the following areas, smoking, eating, and drinking are prohibited except as specifically posted:

   a. Any posted radiation area, high rad area, airborne radioactivity area, contaminated area or radioactive material storage area.
   b. Battery Rooms
   c. Building equipment/HVAC rooms
   d. Security Badge Islands
   e. Labs, sample stations, counting/instrument room
   f. Cable spreading rooms and immediate vicinity of cable trays
   g. Diesel generator, AFW, $H_2O$ treatment plant
   h. Auxiliary, Containment, Fuel Handling, Radwaste Control Bldg.
   i. Document Control records storage area and vault
   j. Micrographic/reproduction work areas
   k. Designated clean areas
   l. Any other area, room and building specifically designated by management

   The absence of containers for the disposal of waste generated as a result of smoking or other uses of tobacco, eating and drinking shall indicate the prohibition of such activities in the area.

Areas Permitting smoking, eating and drinking:
Admin. Bldg.
Service Bldg.
Maint. Bldg.
Training Bldg. except no eating in Simulator room
- Turbine Bldg. except no smoking on turbine gen. floor
- Main Control Rm. away from control panels
- Radwaste Control room away from control panels
- Warehouse office
- Plant entrance and Security Building (excluding search areas)

# III. LESSON OUTLINE:

## NOTES

F. Closed Vessel Entry

1. Definitions

Safe work procedures describe proper work actions/ practices to ensure that a safe working environment is established for personnel required to work in closed vessels, confined spaces, or wet locations.

Reference: Procedure No. 00258-C

Enclosed Volume - Any space large enough for personnel entry with the potential of containing atmosphere hazardous to life (e.g., hazardous gases that could poison or suffocate, potentially explosive mixtures, and/or radioactive contamination.

Confined space (vessel, sump, shaft, pipe, enclosed duct-work, etc.)

Atmosphere hazardous to LIFE - atmospheres that do not meet acceptable air quality criteria; namely that $O_2$ must be greater than 19.5% and combustibles must be less than 20% of the lower explosive limit and toxic gases are within OSHA guidelines.

Closed Vessel - Any enclosed volume/space that can be closed off from the normal atmosphere.

Confined Space - A partially enclosed volume/space that has a greatly reduced ability for air to circulate (normally not vented) or low lying areas/ levels where inert gases may be present or the potential for accumulation exists.

Examples: Dead Air Space, Circulating Water Pipe, Valve Pits

Closed Vessels: Steam Generators Feedwater Heaters Condensers, Storage Tanks, Pressurizers, Drain Tanks, Generator, Turbine Casings, Transformers, Oil Circuit breakers, Rooms that are normally sealed shut.

Wet Locations: Places with accumulations of moisture capable of providing a continuous path for electric current.

2. General Precautions

L.E.L. (Lower Explosive Limit) The minimum conc. of a flammable gas or vapor in air (in percent by volume) in which combustion or explosion can occur.

a. All closed vessels containing any gas except normal air atmospheric pressure shall be marked with a "DANGER" sign at each possible point of personnel entry and the type of gas, pressure, or other hazard shall be identified on the sign.

b. Each enclosed volume shall be marked with an "ENTRY CAUTION" sign affixed near all entry openings. A signed and dated sign indicates that the volume air has been tested by qualified personnel and is safe for entry to perform a specific task.

Signs shall conform to ANSI 235.1 - 1972 and 253.1 - 1971.

Responsibilities
Job Supervisor
Ensures that proper

# III. LESSON OUTLINE:

## NOTES

3. Instructions for Vessels

   Ensure that non-breathable or combustible atmospheres are purged from enclosed volumes so that they do not endanger personnel in the venting area.

   The job supervisor shall ensure that a RWP is obtained before a vessel is opened, if the interior of the vessel could be a radiation or contaminated area.

   When opening any enclosed volume known to contain a possible explosive, only non-sparking soft metal tools and explosive proof flashlights will be used. The foreman shall ensure that the volume has been purged and that the area is roped-off and that "NO SMOKING" signs are posted in the area of the opening. On SS (OSS) shall be informed when opening any vessel.

4. After opening vessel and before allowing work

   a. Air displacement is required in all enclosed vessels that are not normally vented to air or drained under air, prior to initial entry.

   b. Employee(s) will be posted outside a vessel when initial entry of a vessel is being made. Persons performing initial entry will wear approved safety harnesses, wristlets, or vests with lifelines anytime the employee(s) posted outside cannot safely reach them. The employee(s) posted outside the vessel shall:

      1) Man the lifelines and be trained in the use of and have available, self-contained breathing apparatus.
      2) Be able to communicate with personnel entering the vessel either by voice, air horn, telephone, or other means.
      3) Be briefed on what rescue actions should be taken if an emergency develops.

   c. Names of personnel, equipment, tools, etc. that are to enter a vessel (or other areas) should be listed on the Enclosed Volume Entry Checklist. Upon entering the vessel personnel shall initial and date the EVEC adjacent to his/her name upon initial entry to an enclosed volume.

work practices are followed when opening, making initial entry, and performing work in vessels, confined spaces or work locations.

NOTE: HP personnel will be present during the opening and shall monitor radiation levels of the vessel outside prior to opening, and inside, prior to personnel entry. RWP shall be revised to reflect internal radiation levels as appropriate.

CAUTION: An employee shall be posted outside a vessel, if working conditions are such that a hazardous atmosphere could develop.

# III. LESSON OUTLINE:

## NOTES

5. During Work Inside Vessels

A ventilation system shall be required if adequate ventilation is not provided by natural draft means:

a. If strange odors are noticed or if unusual sensations such as headaches, dizziness or breathing difficulties are experienced, personnel should leave the enclosed area immediately.

b. No smoking is allowed in vessels.

c. Adequate lighting must be provided to permit safe passage on all stairways, ladders, and scaffolding while work is in progress.

d. PERFORMING EMERGENCY WORK IN VESSELS CONTAINING ATMOSPHERES IMMEDIATELY HAZARDOUS TO LIFE.

Only self-contained breathing apparatus can be used when performing emergency work in such atmospheres.

No emergency work is to be undertaken in gas atmospheres containing combustibles greater than LEL.

G. Vessel Restoration

1. After work is complete in a vessel, it should be inspected to ensure that ~~an~~ all equipment is removed, all personnel have exited and the vessel is clean to appropriate standards. It may then be reclosed.

H. Protective Tagging

Reference Procedure No. 00304-C

Procedure which provides instructions for requesting, issuing, and releasing clearances on plant equipment or systems to ensure safety of personnel and protection of equipment during maintenance, testing or inspection.

1. Clearance - An authorization/permit to work on plant equipment that has been safely isolated by: 1) disconnecting all sources of power, 2) positioning all necessary valves, dampers, etc. to a safe position, 3) venting or draining the appropriate fluids and/or gases and placing the appropriate HOLD TAGS on the equipment or system.

Green Tags are placed on permanent plant equipment as it is completed and turned over to Nuclear Ops. Green tags indicate that equipment belongs to N.O. and may be energized or start-up at anytime. Unless equipment is verified as de-energized by a clearance issued, it is to be assumed the equipment is energized.

a. Hold Tags designate plant equipment which has been placed in a specific position for personnel or equipment safety.

b. Switchyard Hold Tags designate switchyard equipment which has been placed in a specific position for personnel or equipment safety.

# III. LESSON OUTLINE:

## NOTES

c. Temporary Modification Tag identifies equipment that has been temporarily modified for test purposes.

d. Jurisdiction Tag identifies equipment that has been turned over from construction to nuclear operations for testing and acceptance.

e. Caution High Voltage Tape identifies areas in which high voltage equipment is being used.

f. Temporary Release Tag designates permanent plant valves that have been leak tested and temporarily released to Nuclear Operations for maintenance.

DO NOT TAMPER with tags or the equipment that tags are attached upon without proper authorization and special precautions.

2. Removal of any of these tags or operation of equipment upon which these tags are attached without approval from Nuclear Operations is STRICTLY PROHIBITED.

3. Look for signs placed throughout the jobsite explaining Nuclear Operation's tags.

I. Safety Harness Policy

A. Safety harnesses, wristlets or vests are provided for personnel if procedure requires or if it is determined by supervisory personnel that this equipment is needed for safety of personnel.

B. Safety Belts, Scaffolds, Fall Protection - Safety belts are required when working 6 feet or higher off the ground or floor, and near open-sided floors and platforms.

J. Spill Policy

Procedures that outline personnel actions relating to spill prevention control and countermeasures for oil, hazardous substances, and hazardous waste to minimize the potential for discharges of these materials into navigable U.S. waters.

1. Condition

Detection of hazardous waste or hazardous waste substances spills is limited to the visible loss of integrity of the container which is known to contain such materials or the accumulation of such materials outside their containers.

An oil spill may be indicated by:

# III. LESSON OUTLINE:

NOTES

a. Oil slicks or suspected oil slicks at the discharge structure, in the yard drain effluents, or in the circulating $H_2O$ flumes.

b. Oil in the D/G day tank room floor or the D/G room floor.

c. Decreasing tank level in the underground fuel oil storage tanks not accounted for by use.

d. Visual observation.

2. Individual Action

All persons employed at Vogtle are responsible for reporting spills, leaks, or suspected leaks of oil, hazardous substances, or hazardous waste. The person finding such an event is to notify their immediate supervisor, the Emergency Coordinator and/or the shift supervisor giving the following information.

a. Time, place, type of incident (spill, leak, fire, release, etc.), and your name and present location.

b. Name and quantity of materials involved.

c. Appropriate actions taken to contain the spill, leak, fire, and/or release.

d. Type cleanup in progress.

e. Bodily injuries, extent of injuries, and hospital where injured person(s) is(are) taken if applicable.

f. Potential hazards to human health or the environment outside plant boundaries and direction of flow of the potential hazard.

g. Natural disaster associated with incident, if applicable, i.e., tornado, earthquake, flood, or lightning.

h. Individual notified by name and title.

3. In the event of a fire or explosion, the person finding the situation should undertake the following possible actions:

a. Check that fire doors are closed to isolate the affected area.

# III. LESSON OUTLINE:

NOTES

b. Evacuate all personnel in the immediate area.

c. Attempt to isolate flammable or combustible gases.

d. Call the Safety and Fire Protection Supervisor (S&FPS)

1) At extension 300. The S&FPS will sound the fire alarm, or
2) Call the control room at extension 3432 4311 to sound the fire alarm.

e. Call the Emergency Coordinator at extension 455.

f. Removed injured personnel, as possible.

g. Administer first aid, as qualified.

h. Monitor the situation for response personnel.

i. Wait there until relieved by the Emergency Coordinator or his designee:

NOTE!! Action should be taken with personnel safety being the most important considerations.

In the event of a chemical spill, the Emergency Coordinator should take appropriate actions depending on the chemical properties.

K. Heavy Equipment, Cranes, and Hoists

Stay clear of work operations involving heavy equipment unless you are directly associated with the work. In areas where cranes and hoists are in use, be cautious of overhead loads and stay beneath them. Personnel using hoisting equipment (such as tuggers, spyder, baskets, etc.) are to be properly trained and authorized.

L. Glass Containers

No glass containers are allowed on the construction project.

M. Barricade Policy

Signs have been placed throughout the power block and each access gate with examples of the different barricade materials and reasons for each.

# III. LESSON OUTLINE:

## NOTES

1. The barricade policy must be followed to ensure overall consistency and prevent possible injuries. This is particularly vital with the stages of equipment testing for turnover and startup.

2. Yellow Ban-Gard Tape, 3" wide with black lettering continuously repeating the message is used to prevent access for specific reasons.

3. The following are a list of the barricade signs:

   a. "Do Not Enter" - used when hazardous areas forbid any entry into the area.

   b. "Men Working Overhead" - used when working, welding, cutting, rigging, etc., poses a hazard to anyone below.

   c. "High Voltage" - used when the danger of access into areas where high voltage, testing of energized equipment, hi-podding, etc. exists.

   What is hi-podding?

   d. "Radiation Area" - used for areas where radiographic testing is in progress. The magenta (purple) and yellow stranded rope with radiation signs attached, along with flashing red lights are to be placed at every accessible point of entry.

4. Yellow Tape, 2" wide with a black strip along the center is used to identify and designate storage areas when required in the power block.

5. Barricades are to always be at least double stranded, at levels chest and below the waist high, at all points of entry or access into areas of exposure.

6. Barricades are to be taken down and removed immediately when the hazard is corrected or resolved and the area is safe.

7. Employees entering or directing others to enter a barricaded area unauthorized is a serious matter and will be handled accordingly.

8. By following the barricade procedure, we will prevent any employee from being exposed to a potential hazard unknowingly due to the area not being properly ~~worked~~ marked or posted.

# III. LESSON OUTLINE:

## NOTES

N. Drilling into Walls or Columns

Activities that can create severe personnel hazards due to cutting, drilling, or digging into high energy fluid or electrical systems.

1. To prevent accidental contact with embedded electrical circuits or reduce the risk associated with contact always follow the directions given below:

   a. Plan work to avoid embedded circuits. Where circuits are known to exist in an area of intrusion and cannot be precisely located verify that they are de-energized before work begins.

   b. If cutting or drilling in unavoidable areas of high uncertainty, special tools or techniques designed for the application can be used that will isolate the worker from the circuit (insulating gloves and platform, remote control tools, etc.).

2. Any structure that contains embedded circuits will be marked or posted with warning signs. Take necessary precautions to prevent electrical ~~short~~ shock.

O. Explosive Fire Hazards of Hydrogen

Hydrogen is a basic chemical element that has an extremely wide flammable range and the highest burning velocity of any gas. Its ignition temperature is reasonably high, but its ignition energy is very low. Hydrogen contains no carbon, so it burns with a non-luminous flame which is often invisible in daylight. When released from containment, hydrogen presents both combustion explosion and fire hazards.

4% - 75% $H_2$ conc. could lead to an explosion. Hydrogen is used in welding and cutting, (as a metal heat-treating special atmosphere, and as a coolant in large electrical generators. In areas where hydrogen and other flammable gases are contained, smoking and handling flames of any kind are strictly prohibited.

1. Gaseous hydrogen has a low ignition energy when it is released at high pressure, normally small heat producing source, e.g., friction and static generation result in prompt ignition releases in high pressure applications usually result in fires rather than combustion explosions.

   a. Hydrogen combustion explosions occur by very rapid pressure rises which are extremely difficult to vent effectively.

   b. Open air or space explosions will occur from very large releases of gaseous hydrogen.

# III. LESSON OUTLINE:

## NOTES

2. Liquid hydrogen and air can result in condensation of air and its oxygen and nitrogen components.

   a. A mixture of hydrogen and liquid oxygen is potentially explosive even when the quantities are very small.

   b. At ordinary temperatures, hydrogen is very light, weighing about 1/15 as much as air. Hydrogen's high diffusion rate makes it difficult for hydrogen to accummulate in conventional structures unless its escape rate is high. This tends to reduce its combustion explosion hazard.

Dissociation of $H_2O$ in the steam generation cycle results in the release of hydrogen

3. Areas in the Plant where hazardous gas mixtures may exist:

   a. Turbine generator exciter
   b. Hydrogen cooling gas in generator building
   c. Hydrogen or oxygen by radiolysis in the core and hydrogen for improved recombustion
   d. Off gases from vents

4. Areas in the plant where hydrogen or other hazardous gas mixtures may exist will be posted with warning signs to make personnel aware of the potential hazards of the location.

P. Reporting Hazards and Unsafe Conditions

Whenever hazards and unsafe conditions are found, they should be reported immediately to supervision and/or the Safety Department. It is the responsibility of all employees to adhere to safety policies and procedures and to report any hazardous or unsafe conditions so that the necessary actions can be taken to correct the condition.

II. SUMMARY

Emphasize the importance or safety and that safety is the responsibility of all employees.