

**ADDENDUM TO SPCC BILDGE WATER PLANT
HEALTH AND SAFETY PLAN**

Site: SPCC BILDGE WATER PLANT
NAVAL WEAPONS STATION-EARLE

Location: COLTS NECK, NEW JERSEY

Prepared By: FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Project Description: OIL/SLUDGE EFFLUENT PIPING AND SUMP CLEANOUT

**REMEDIAL ACTION CONTRACT N62472-94-D-0398
DELIVERY ORDER NO. 0034**

Comments:

Waste Types: Liquid, Sludge, Solid
Characteristics: Volatile, Toxic
Unusual Features: None
Status: Bildge Water Treatment Plant
Overall Hazard: Low to Moderate

INTRODUCTION

This is an Addendum to the Previously-Approved Health and Safety Plan (HASP) for the SPCC Bidge Water Plant at the Naval Weapons Station-Earle Site. This Addendum addresses the health and safety concerns associated with the Oil/Sludge Effluent Piping and Sump Cleanout. This Addendum is being submitted to satisfy the pre-construction submittal requirements included in paragraph 1.2.1, Pre- and Post-Construction Documentation of the Statement of Services for Delivery Order No. 0034 under Remedial Action Contract No. N62472-94-D-0398.

The SPCC Bidge Water Plant HASP includes pertinent site information for general health and safety issues, emergency response, project contacts, etc. This addendum to the HASP addresses specific issues, action levels and hazards associated with the Oil/Sludge Effluent Piping and Sump Cleanout.

This Addendum contains Activity Hazard Analyses (AHAs), Confined Space Entry Procedures, and an Action Level Table specific for the Oil/Sludge Effluent Piping and Sump Cleanout. All of the other applicable health and safety information is contained in the SPCC Bidge Water Plant HASP, which will be kept on site with this Addendum.

ATTACHMENTS

Attachment 1:	Activity Hazard Analyses
Attachment 2:	Action Levels
Attachment 3:	Confined Space Entry Procedures

ACTIVITY HAZARD ANALYSIS

Project: SPCC BILDGE WATER PLANT
 Activity: Oil/Sludge Effluent Piping and Sump Cleanout

Location: NWS-EARLE, COLTS NECK, NJ

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Pump out existing contents of sump into 55-gallon drums (Hazards and controls 1, 2, 5 - 9, 11 - 14, 17 apply)	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; instruct personnel on proper lifting techniques.
2. Stage and load drums for disposal (Hazards and controls 1 - 14 apply)	2. Slips/Trips/Falls	2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
3. Break/Cut lines to bleed contents into sump. (Hazards and controls 1, 2, 5 - 9, 11 - 14, 16 - 18 apply)	3. Vehicular Traffic	3. Spotters will be used when backing up trucks and heavy equipment and moving equipment.
4. Pump out waste, flush lines with cleaning solution/water, pump out cleaning solution and residual, clean sump using a pressure washer, pump out wash water(Hazards and controls 1, 2, 5 - 9, 11 - 15, 17 apply)	4. Overhead Hazards	4. Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. All ground personnel will stay clear of suspended hoses. All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. All overhead hazards will be identified prior to commencing work operations.
5. Confined space entry for entering sump to cut piping and to cut concrete to modify piping, following CSE procedures (Hazards and controls 1, 2, 4 - 9, 11, 13, 16, 17 apply)	5. Dropped Objects	5. Steel toe boots meeting ANSI Standard Z41 will be worn.
	6. Noise	6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); ESS will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers
	7. Temperature extremes	7. Engineering controls will be implemented to minimize exposure to temperature extremes including work rest regiments, warm/cool rest areas, protective clothing, and minimize exposure time.
	8. Eye Injuries/Struck By	8. Safety glasses meeting ANSI Standard Z87 will be worn. Utilize vent locks on pneumatic hoses.
	9. Hand and Power Tools	9. Daily inspections will be performed; remove broken or damaged tools from service; use the tool for its intended purpose; and use in accordance with manufacturers instructions.
	10. Heavy Equipment (overhead hazards, spills, struck by or against)	10. Equipment will have seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; spill and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; eye contact with perators will be made before approaching equipment; equipment will not be approached on blind sides; all equipment will be equipped with backup alarms.

Project: SPCC BILDGE WATER PLANT
 Activity: Oil/Sludge Effluent Piping and Sump Cleanout

Location: NWS-EARLE, COLTS NECK, NJ

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	11. Fire/Explosion	11. Vent or purge lines and sump if LEL is greater than 10%. Drill idiot hole to monitor levels in piping, use coolant oil when drilling. ABC type fire extinguishers shall be readily available; no smoking in work area..
	12. Fuel Spills	12. Spill and absorbent materials will be readily available.
	13. Chemical Hazards	13. Level D mod will be used for steps 1, 2, and 4 based on acceptable air monitoring action levels. PPE will include hard hat, safety glasses, plastic face shield during pressure washing operations, nitrile gloves, tyvek, rubber steel toed boots or steel toed work boots with over boots, ear plugs as needed. Level C will be used for steps 3 and 5. PPE will include hard hat, full face respirator with OV cartridges, poly-coat tyvek, nitrile gloves, rubber steel toed boots or steel toed boots with over boots, ear plugs as needed. Air monitoring will be conducted. See the attached table for action levels.
	14. Pinch/Cut/Smash	14. Care is to be taken when working with pump or pressure washer hoses, cut resistant work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in plac while using hand and power tools.
	15. Steam/Heat/Splashing	15. Use face shield and safety glasses or goggles with pressure washer; stay out of splash/steam radius; do not direct steam at anyone; do not hold objects with your foot or hands and steam area near it; ensure that direction of spray minimizes spread of contaminants; use shielding as necessary; pressure washer will be equipped with a deadman's switch; use wand extenders. Use moderate temperature and pressure.
	16. Confined Space Entry	16. Confined space entry procedures in EHS 6 - 1 will be followed. These procedures include, but are not limited to the following: completion of a CSE permit, air monitoring prior to and during CSE activities, and means for non-entry rescue. Stop work if LEL is greater than 10% in sump.
	17. Electrocutation	17. Equipment will be equipped with GFCI. Low voltage, caged, water proof, explosion proof lighting will be used in sump during cleaning activities. All equipment will stay a minimum of 15 feet from energized electrical lines (50kV). This distance will increase .4 inches for each 1kV above 50 kV.
	18. Breaking Lines	18. Line-breaking checklist should be completed before starting the activity. This planning tool should focus on: isolating the segment to be opened, locking out the isolation devices, verifying that the segment is safe to be cut/open, draining the liquids and relieving pressure in the segment , using the proper tools, air monitoring for LEL, and contingency preparations.

Project: SPCC-BIDGE WATER PLANT
Activity: Oil/Sludge Effluent Piping and Sump
Cleanout

Location: NWS-EARLE COLTS NECK, NJ

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ol style="list-style-type: none">1. Appropriate PPE2. Hand and Power tools3. First Aid Kits4. Portable Eyewash5. Fire Extinguishers6. Pressure Washer7. sump pump8. Sawsall/PVC saw9. Air monitoring equipment10. Jack hammer	<ol style="list-style-type: none">1. Weekly inspections will be performed on fire extinguishers.2. Weekly inspections will be performed on first aid kits.3. Inspections will be performed on equipment/tools prior to each use.4. Portable eye wash will be inspected weekly.5. Air monitoring equipment to be calibrated and inspected as indicated in HASP.6. Inspect power washer prior to use as per manual.7. Inspect jack hammer and pneumatic apparatus prior to use.	<ol style="list-style-type: none">1. Personnel have read and comply with SHSP2. Site specific training3. Qualified operators will be used for equipment operation4. Instruct personnel on proper use of fire extinguishers5. At least two individuals on-site will have current CPR, First aid and bloodborne pathogen training.6. Air monitoring will be performed by a FWENC HSO/ESS trained person.7. Personnel training on pressure washer, and use experienced personnel if possible.8. Use only experienced personnel to operate the jack hammer.

ACTIVITY HAZARD ANALYSIS
SPCC Bidge Water Plant
Oil/Sludge Effluent Piping and Sump Cleanout

AIR MONITORING INSTRUMENT	MONITORING LOCATION	ACTION LEVEL	SITE ACTION	REASON
PID	Breathing Zone	0 - 50 PPM	No respiratory protection; Continue work	½ Xylene PEL (PEL=100PPM)
PID	Breathing Zone	>50 - 250 PPM	Upgrade to Level C respiratory protection; Initiate vapor suppression control efforts.	Conservative response to PEL.
PID	Breathing Zone	>250 PPM	Upgrade to Level B respiratory protection. Consult PHSM.	High potential for exposure to VOCs. Re-evaluate potential hazards
Detector Tube and Pump	Breathing Zone	< 15 PPM	Monitor for Methylene Chloride with Detector Tube. No respiratory protection; Continue work	Determine absence or presence of Methylene Chloride. Action level based on ~ ½ Methylene Chloride PEL. (PEL=25 PPM)
Detector Tube and Pump	Breathing Zone	>15 - 100 PPM	Upgrade to Level C respiratory protection	Presence of Methylene Chloride. Action level based on ~ ½ Methylene Chloride PEL.
Detector Tube and Pump	Breathing Zone	> 100 PPM	Upgrade to Level B respiratory protection. Consult PHSM.	High potential for exposure to Methylene Chloride. Re-evaluate potential hazards
Combustible Gas Indicator	Work Area Sump Atmosphere	LEL < 10%	Investigate possible causes, use caution during procedures.	Potential for ignition of vapors.
Combustible Gas Indicator	Work Area Sump Atmosphere	LEL > 10%	Stop work; withdraw from work area, allow to vent.	Increasing potential for ignition of vapors, explosive atmosphere
Oxygen Meter	Breathing Zone	< 19.5%	Stop work; withdraw from work area if readings are in breathing zone; notify PHSM	Oxygen deficient atmosphere, respiratory hazard.
Oxygen Meter	Breathing Zone	> 22%	Stop work; withdraw from work area if; notify PHSM	Oxygen enriched atmosphere; explosion

EHS 6-1:**Confined Space Entry (Previously HS6-2)****Purpose**

When required, this program provides the requirements to ensure a safe working environment within and around confined space operations by evaluating confined space hazards, implementing necessary controls, and regulating employee entry into confined spaces in accordance with 29 CFR 1910.146, Permit-Required Confined Spaces.

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1.0 PURPOSE

When required, this program provides the requirements to ensure a safe working environment within and around confined space operations by evaluating confined space hazards, implementing necessary controls, and regulating employee entry into confined spaces in accordance with 29 CFR 1910.146, Permit-Required Confined Spaces.

Confined space entries should only be made if there is not a feasible method of performing the task from outside of the confined space.

2.0 SCOPE

This program applies to all Foster Wheeler Environmental Corporation (FWENC) employees, operations, and subcontractors.

3.0 MAINTENANCE

The Director, Environmental, Safety and Quality (ESQ) Programs is responsible for updating this procedure. Approval authority rests with FWENC's President and Chief Executive Officer. Suggestions for revision shall be submitted to both the department responsible for updating the procedure and the Director, Administration and Compliance.

4.0 DEFINITIONS

4.1 Acceptable Entry Conditions

The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

4.2 Attendant

An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

4.3 Confined Space

An enclosed area which exhibits the following characteristics:

- Is large enough and so configured that an employee can bodily enter;
- Has limited or restricted means for entry or exit; and

- Is not designed for continuous occupancy.

4.4 Double Block and Bleed

The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

4.5 Engulfment

The surrounding and effective capture of a person by a liquid or finely divided solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

4.6 Confined Space Entry Permit

The completed document which specifies the hazards, controls, and procedures for a confined space entry.

4.7 Entry

The action by which a person passes through an opening into a confined space. Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

4.8 Entry Supervisor

The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

4.9 Hazardous Atmosphere

An atmosphere which meets one or more of the following criteria:

- Flammable gas, vapor, or mist in excess of 10 percent of the lower explosive limit; or
- An airborne concentration of a dust at a concentration that meets or exceeds its lower explosive limit (rule of thumb - visibility obscured at a distance of 5 feet); or
- Atmospheric concentration of any substance which could result in employee exposure in excess of its recommended exposure limit, i.e., Permissible Exposure Limit (PEL), Threshold Limit Value (TLV), or manufacturer's limit; or
- Immediately dangerous to life or health (IDLH).

4.10 Inerting

The displacement of the atmosphere in a permit space by a noncombustible gas to such an extent that the resulting atmosphere is noncombustible.

4.11 Isolation

A pre-entry requirement which assures that the confined space has been completely taken out of service and insures that accidental introduction of hazardous substances into the confined space may not take place. Isolation may include blinding, double blocking with bleed valves, capping, and/or lockout/tagout.

4.12 Line Breaking

The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

4.13 Non-permit Required Confined Space

A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

4.14 Oxygen Deficient

An atmosphere containing less than 19.5 percent oxygen by volume.

4.15 Oxygen Enriched

An atmosphere containing 22.0 percent or more oxygen by volume. (Note: The 22% upper limit is an NFPA 306k, Certification of Hot Work, Consensus Standard.)

4.16 Permit Required Confined Space

A confined space which has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfment of the entrant; or
- Has an internal configuration that could trap or asphyxiate an entrant.

4.17 Prohibited Conditions

Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

4.18 Retrieval System

The equipment used for non-entry rescue of persons from permit spaces.

5.0 DISCUSSION

5.1 Responsibilities

5.1.1 Authorized Entrants

Entrants are responsible for the following:

- Inspection of operability and integrity of all respiratory apparatus, safety equipment, and personal protective equipment (PPE) to be used/worn;
- Knowing hazards, mode of exposure, signs and symptoms, and consequences of hazardous exposure;
- Communicating with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space;
- Notifying the attendant of undetected / unnoticed hazards which could cause harm or injury to team personnel, warning signs and symptoms of exposure, and prohibited conditions;
- Wearing the designated respiratory apparatus, safety equipment, and PPE in accordance with EHS 5-2, Respiratory Protection and EHS 5-1, Personal Protective Equipment;
- Knowing the emergency procedures; and
- Exiting from the permit space when evacuation is ordered, warning signs or symptoms of exposure are noted, a prohibited condition is noted, or an alarm is activated.

5.1.2 Attendants

Attendants are required to assume the following duties and responsibilities:

- Inspection of operability and integrity of all respiratory apparatus, safety equipment, and PPE to be used/work in accordance with EHS 5-2, Respiratory Protection and EHS 5-1, Personal Protective Equipment;
- Know the hazards that may be faced during entry, including information on the mode, signs

or symptoms, and consequences of the exposure;

- Be aware of possible behavioral effects of hazard exposure in authorized entrants;
- Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space;
- Leave their position only after being physically replaced by another attendant. If required to leave their post and no replacement is available, they must evacuate all personnel from within the confined space before leaving;
- Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and order the authorized entrants to evacuate the permit space immediately if a prohibited condition is noted, if an authorized entrant shows behavioral effects of a hazard exposure, if a saturation develops outside the confined space that may endanger the entrants, or if the attendant cannot effectively and safely perform his or her required duties;
- Summon rescue and emergency services;
- Warn unauthorized persons that they must stay away from the permit space, advise them to exit immediately if they enter the permit space, and inform the entry supervisor if they enter the space;
- Perform non-entry rescues;
- Perform no duties that interfere with the attendant's primary duty to monitor and protect the authorized entrants;
- Remain in constant communication with the entrant at all times; and
- Perform atmospheric monitoring per the confined space permit under the direction of the entry supervisor, if trained to perform the monitoring.

5.1.3 Entry Supervisors

Entry supervisors have the following responsibilities:

- Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposures;
- Verifies by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin;
- Verifies that rescue services are available and that the means for summoning them are operable;
- Removes unauthorized individual who enter or who attempt to enter the permit space during entry operations;
- Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry

conditions are maintained;

- Ensures full compliance with FWENC and customer permit requirements;
- Ensures that all confined space pre-entry precautions have been taken;
- Ensures that atmosphere/personnel monitoring is performed at adequate frequencies to protect the safety and well being of the entry personnel;
- Ensures that emergency procedures and individual assignments are clearly defined, and to coordinate rescue procedures if necessary; and
- Terminates the entry and cancels the permit.

The entry supervisor may also serve as attendant.

5.1.4 Line Management

The Project Manager (PM) has the responsibility for:

- Ensuring implementation of the confined space entry program
- Ensuring that only trained, qualified, and medically fit personnel participate in confined space entry operations; and
- Ensuring that adequate, appropriate, and properly maintained equipment required to safely enter a confined space and successfully complete the task.

5.2 Procedure

The following sections provide the requirements for pre-entry activities, pre-entry briefings, confined space operations, and program review requirements. Complete implementation of these requirements is necessary to ensure the health and safety of personnel during confined space operations.

No entries shall be made into confined spaces with:

- IDLH atmospheres;
- LEL readings in excess of 10% or a combustible dust atmosphere in excess of the LEL; or
- An oxygen content of less than 19.5% or greater than 22.0%.

5.2.1 Hazard Evaluation

Prior to the initiation of a confined space entry, a hazard evaluation of the space shall be conducted by the entry supervisor to determine what chemical and physical hazards are present. This review shall be documented on the entry permit and include, but not be limited to the following:

- Potential for oxygen deficient or enriched atmosphere;

- Presence of a flammable atmosphere;
- Presence of toxic air contaminants;
- Presence of physical hazards;
- Sources of hazardous energy that must be de-energized to effectively isolate the confined space;
- Other permits, such as hot-work or lockout/tagout, required to control hazards; and
- Acceptable entry conditions.

Various sources of information for hazard identification that may be used include blueprints, as-builts, client employee knowledge, past entry information, air monitoring data, and physical inspection. For each hazard identified, an effective means of control shall be documented on the confined space entry permit.

5.2.2 Atmospheric Testing

The atmosphere of the confined space shall be tested to determine the initial concentrations of the following:

- Oxygen content;
- Flammable or combustible gases or vapors; and
- Toxic air contaminants.

Testing for the initial concentrations shall be conducted in the order given and documented on the entry permit. LEL, oxygen, and toxicity readings must be taken at least every 15 minutes. If isolation of the space is unfeasible because the space is large or part of a continuous system, the monitoring shall be continuous. Frequency for periodic monitoring during the confined space entry shall be specified and documented on the permit.

5.2.3 Ventilation

Mechanical ventilation shall be initiated where necessary to prevent exposure of employees to hazardous atmospheres. The ventilation shall meet the following requirements:

- It shall be continuous;
- It shall be directed into the immediate area authorized entrants shall work in;
- The air supply shall be from a clean source and shall not increase the hazards in the area; and
- Employees shall not enter the space until the ventilation clears the hazardous atmosphere.

When ventilation practices cannot be used, a supplied air respirator must be utilized. Exceptions may be made by the Project Environmental and Safety Manager (PESM).

Ventilation equipment must be bonded and grounded prior to operation. Ventilator exhausts must be directed down wind from personnel and/or areas that contain buildings, equipment, etc.

5.2.4 Isolation

All permitted spaces shall be removed from service and completely protected against the release of energy and material into the space. Means used to isolate the space include but are not limited to the following:

- Lockout/tagout in accordance with EHS 6-4;
- Disconnection of mechanical linkages and hazards;
- Blanking, blinding, or misaligning piping; or
- Double blocking and bleeding.

5.2.5 Equipment Staging

The following equipment shall be available as necessary and inspected prior to use:

- Testing and monitoring equipment;
- Ventilation equipment
- Communications equipment;
- Personal protective equipment;
- Lighting equipment (caged, waterproof, and low voltage);
- Barriers and shields;
- Ingress and egress equipment;
- Rescue and emergency equipment; and
- Any other equipment required to make safe entry into the space.

In spaces where the potential for flammable or combustible atmospheres exists, equipment shall be non-sparking and intrinsically safe. Electrical systems shall be GFCI protected.

5.2.6 Emergency and Rescue Procedures

Based upon the location, hazards, and configuration of the confined space, the entry supervisor shall ensure that the following items are addressed:

- Rescue and emergency services to be used and means of summoning;
- Means of rescuing entrants;
- Rescue and emergency to be used at the site;
- Duties of personnel during emergencies; and
- Prevention of unauthorized entry during rescues.

5.2.7 Client/Contractor Coordination

To ensure safe and efficient operations when FWENC personnel and client or subcontractor employees will make entry together into the same confined space, the following shall be completed by the entry supervisor:

- Inform FWENC contractors of existing confined spaces;
- Provide FWENC contractors with a copy of this program;
- Inform the contractor of known hazards in the space;
- Provide a list of controls implemented previously;
- Coordinate the entry of the personnel; and
- Debrief the contractor regarding this program and any hazards encountered.

When FWENC personnel are required to perform confined space entry in support of client work, the entry supervisor shall complete the following in addition to the above requirements:

- Obtain any available information on the space from the client;
- Coordinate the entry operations with client personnel; and
- Inform the client of entry hazards encountered.

5.2.8 Pre-Entry Briefing

Prior to initiating a confined space entry, the entry supervisor shall conduct a safety briefing with the authorized entrants, attendants, and other relevant personnel. The briefing shall cover the following at a minimum:

- Hazard Communication (including the signs, symptoms, and modalities of chemical over exposure) in accordance with EHS 4-2, Hazard Communications;
- Physical hazards present;

- All hazard controls;
- Acceptable entry conditions;
- Emergency procedures;
- Rescue procedures;
- Duties of entrants and attendants during routine and emergency operations;
- Frequency and Types of air monitoring;
- Communications system and backup to be used;
- Review of work to be accomplished during entry;
- Decontamination procedures (if necessary);
- PPE disposal; and
- Potential emergencies that may occur outside the confined space.

Attachment A or an equivalent checklist shall be used to document pre-entry briefing.

At the end of the briefing, all personnel shall be given opportunity to ask questions and review the permit. After review, each authorized entrant and attendant shall print and sign his/her name on the permit. The completed permit shall be posted at the entry site and serve as a roster for monitoring entry and exit of personnel from the space.

5.2.9 Confined Space Operations

The following practices shall be adhered to during actual confined space entries:

- The entry supervisor shall certify that all equipment is in place and operable, acceptable entry conditions are present, all personnel have been fully briefed and all personnel have signed the permit prior to initiating entry. Attachment B is a copy of the FWENC Confined Space Entry Permit.
- The work area outside the space shall be barricaded to prevent unauthorized personnel from interrupting the attendants or entering the space. Unauthorized personnel shall be asked to leave the barricaded area. If unauthorized personnel refuse to leave the area, operations shall be terminated.
- Atmospheric monitoring for oxygen, LEL, and toxic air contaminants shall be conducted at the frequency noted on the permit. Results shall be logged on the permit.
- No confined space shall be entered without:
 - A full body harness;
 - A 6' lanyard attached to the harness "D" ring; and

- A lifeline attached to the lanyard with the opposite end secured outside the confined space. The lanyard and lifeline must have double locking rings.

Note: Wristlets may be used in lieu of a full body harness if the body harness is infeasible or creates a greater hazard.

- Top entries with a fall potential greater than 5 feet shall be made with fall protection. Fall protection shall meet the criteria specified in 29 CFR 1926.502(d).
- At least one attendant is required for permit-required entries. The attendant shall maintain visual or voice communications with entrants at all times. Attendants shall not leave their post unless formally relieved by another authorized attendant. The replacement shall be fully briefed by the entry supervisor on all information covered in the pre-entry briefing. Entry supervisors may also serve as attendants.
- When any confined space is entered where the noise level or respirator used prevents voice communication, visual contact between the standby and workers must be maintained.
- Metal ladders, hand tools or other instruments which may spark or cause a source of ignition, are not to be used within confined spaces where any detectable amounts of LEL's are present.
- No burning, grinding, chipping, or other operation which produces heat, sparks, or ignition sources are to be performed without a hot work permit.
- One attendant shall be dressed in the same PPE as the authorized entrants, except for respiratory protection. Attendant supplied air shall be from a different source than that of authorized entrants.
- The entry supervisor shall terminate operations when the work is completed, an unacceptable entry condition is detected, or another emergency inside or outside the space is detected. Authorized entrants shall immediately evacuate upon notification of the termination.
- Attendants may monitor multiple sites only if they are able to maintain continuous visual or voice communications with entrants. If continuous communications cannot be maintained, additional attendants shall be used.
- Attendants shall perform non-entry rescues in emergencies using rescue equipment staged at the site.
- Upon completion of work and exit of the entrants, the permit shall be canceled by the entry supervisor and forwarded to the ESS. Permits shall be maintained as a part of the project file.

5.2.10 Deviation From Program Requirements

- Any deviation from this procedure requires the approval of the PESM.
- Approval for entry into permit-required confined spaces with air purifying respirators will be given if:
 - The composition of the hazardous substance(s) in the confined space is well defined;

- The hazardous substance(s) have good warning properties;
- Short-term exposure to the hazardous substance(s) in excess of the recommended exposure limit will not result in serious physical harm;
- The efficiency of the cartridge versus the hazardous substance(s) is known;
- Forced air ventilation is utilized;
- Reliable monitoring methods are available; and
- Monitoring shows airborne concentrations to be less than the recommended exposure level for the contaminants.

5.2.11 Identification of Confined Spaces

A survey of the sites shall be performed prior to the start of work and documented to identify permit-required confined spaces. All permit-required confined spaces shall be identified with a sign. The sign shall contain the following wording of equivalent:

DANGER - PERMIT REQUIRED CONFINED SPACE

DO NOT ENTER

5.2.12 Program Review

The effectiveness of program implementation shall be reviewed by the PESM during site EHS inspections pursuant to EHS 3-3, Inspections, using the canceled permits and relevant incident information. The program will be modified, as necessary, on the basis of the PESM program reviews.

5.2.13 Training

Authorized entrants, attendants, and entry supervisors shall be trained in accordance with 29 CFR 1910.146 (g) including the following topics as appropriate:

- The contents of this procedure;
- Their respective duties;
- CPR /First Aid (attendants and entry supervisors if they are serving as rescue personnel);
- Hazards commonly found in confined spaces;
- Lockout/tagout procedures;
- Isolation practices;
- Ventilation of confined spaces;
- Supplied air respiratory protection and SCBAs;

- Self rescue;
- Methods of communication;
- Atmospheric monitoring; and
- Rescues.

Training shall establish employee proficiency in the skills required for confined space entry and the understanding and knowledge for the safe performance of all duties required by this procedure. Training records shall be maintained in accordance with EHS 1-9, Recordkeeping.

6.0 REFERENCES

Environmental, Health & Safety Programs EHS 1-9, Recordkeeping 
Environmental, Health & Safety Programs EHS 3-3, Inspections 
Environmental, Health & Safety Programs EHS 4-2, Hazard Communications 
Environmental, Health & Safety Programs EHS 5-1, Personal Protective Equipment 
Environmental, Health & Safety Programs EHS 5-2, Respiratory Protection 
Environmental, Health & Safety Programs EHS 6-4, Lockout/Tagout 
OSHA (U.S. Department of Labor, Occupational Safety and Health Administration)
29 CFR 1910.146, Permit-Required Confined Spaces
29 CFR 1926.502(d), Fall Protection.

7.0 ATTACHMENTS

Attachment A - Pre-Entry Briefing Checklist
Attachment B - Confined Space Entry Permit

**ATTACHMENT A
PRE-ENTRY BRIEFING CHECKLIST**



FOSTER WHEELER ENVIRONMENTAL CORPORATION

**CONFINED SPACE ENTRY
PRE-ENTRY BRIEFING CHECKLIST**

- Hazard Communication (including the signs, symptoms, and modalities of chemical overexposure).
- Physical hazards present.
- All hazard controls.
- Acceptable entry conditions.
- Emergency procedures.
- Rescue procedures.
- Duties of entrants and attendants during routine and emergency operations.
- Frequency and Types of Monitoring.
- Communications system backup to be used.
- Review of work to be accomplished during entry.
- Decontamination procedures (if necessary).
- PPE disposal
- Potential emergencies that may occur outside the confined space.

**ATTACHMENT B
CONFINED SPACE ENTRY PERMIT**



Confspac.d



FOSTER WHEELER ENVIRONMENTAL CORPORATION

CONFINED SPACE ENTRY PERMIT

PERMIT VALID FOR ONE SHIFT ONLY. ALL PERMIT COPIES REMAIN AT SITE UNTIL JOB COMPLETED.

DATE: _____ SITE LOCATION/DESCRIPTION: _____
 PURPOSE OF ENTRY: _____
 SUPERVISOR(S) IN CHARGE OF CREWS/TYPE OF CREW/PHONE #: _____
 COMMUNICATION PROCEDURES: _____
 RESCUE PROCEDURES AND PHONE NUMBERS: _____

REQUIREMENTS COMPLETED	DATE	TIME	REQUIREMENTS
COMPLETED	DATE	TIME	
Breathing Apparatus	_____	_____	Line(s) Broken-Cappe Blank
Emergency Escape/Fall Retrieval Equipment	_____	_____	Protective Clothing
Fire Extinguishers	_____	_____	Purge-Flush and Vent
Full Body Harness w/ "D" Ring	_____	_____	Respiratory Protection
Lifelines	_____	_____	Secure Area (Post and Flag)
Personnel	_____	_____	Standby Safety
Lighting (Explosive Proof)	_____	_____	Ventilation

Note: For items that do not apply, enter N/A in the blank. See reverse side for special requirements.

RECORD MONITORING RESULTS EVERY 1/4 HOUR

TEST(S) TO BE TAKEN	Permissible Entry Level	Time(s)
PERCENT OF OXYGEN	19.5% to 22.0%	
LOWER FLAMMABLE LIMIT	Under 10 %	
_____	_____	
_____	_____	
_____	_____	

REMARKS:

GAS TESTER NAME & CHECK # _____ INSTRUMENT(S) USED _____ MODEL &/OR TYPE _____
 SERIAL &/OR UNIT # _____

SUPERVISOR AUTHORIZATION—ALL CONDITIONS SATISFIED:
 DEPT/PHONE _____

CONFINED SPACE PERMIT (Continued)

PRINT NAME: _____ SIGNATURE: _____

FUNCTION (i.e., entrant, attendant, or supervisor)

SPECIAL REQUIREMENTS:

COMMENTS: