

<p>CNS OPERATIONS MANUAL ADMINISTRATIVE PROCEDURE 0.36.3 CONFINED SPACE PROCEDURE</p>	<p>USE: INFORMATION QUALITY: QAPD RELATED EFFECTIVE: 10/19/09 APPROVAL: ITR-RDM OWNER: D. A. JONES DEPARTMENT: SHU</p>
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1. PURPOSE.....	1
2. PRECAUTIONS AND LIMITATIONS.....	1
3. INSTRUCTIONS.....	3
4. NON-PERMIT REQUIRED CONFINED SPACES.....	19
5. SPECIAL EVOLUTIONS IN PERMIT REQUIRED CONFINED SPACES	20
6. TRAINING	20
7. COMPLIANCE.....	21
8. TERMINATION AND FILING.....	21
9. RECORDS	21
ATTACHMENT 1 CONFINED SPACE PERMIT (CSP).....	22
ATTACHMENT 2 CONFINED SPACE PERMIT SUPPLEMENTARY TIME RECORD FORM.....	23
ATTACHMENT 3 SITE CONFINED SPACE LIST	24
ATTACHMENT 4 INFORMATION SHEET.....	34

REV.	DATE	CHANGES
12	5/17/08	Removed reference to the training course required for entry into a confined space. This course will no longer be the qualification mechanism for confined space entry.
13	10/19/09	Deleted Turbine Lube Oil Conditioner Tank from Attachment 3, Site Confined Space List, per CED 6026860.

1. PURPOSE

- 1.1 This procedure outlines the requirements for working within confined spaces in order to ensure a safe working environment for personnel.

2. PRECAUTIONS AND LIMITATIONS

WARNING – Personnel are not allowed to make entries into confined spaces where atmospheres are oxygen deficient, explosive or toxic, with the exception of rescue personnel wearing the proper personal protective equipment during an emergency for life saving operations.

- 2.1 The number of personnel working within confined work space shall be kept to a minimum, consistent with safety requirements.

- 2.1.1 A minimum of two personnel (an entrant and attendant) shall be assigned when performing work in a Permit Required Confined Space.

- 2.2 Permit Required Confined Space atmospheres shall be monitored prior to personnel entry and be continuously monitored while the confined space is occupied.
- 2.3 Oxygen shall not be used to ventilate a confined space atmosphere.
- 2.4 Confined space openings (entrances and exits) shall be maintained clear of stored items which might block personnel from easily entering or exiting the area.
- 2.5 Only electrical equipment which is approved as intrinsically safe shall be used within potentially flammable hazardous atmospheres.
- 2.6 Electrical power cords (for tools, lights, etc.) and flammable/combustible liquid or gas lines (i.e., welding hose, hydraulic hoses) should be physically protected when the potential for damage exists.
 - 2.6.1 All electrical equipment introduced into a confined space shall be of the low-voltage type (12 VDC) or protected by a ground fault circuit interrupter.
 - 2.6.2 Adequate lighting shall be provided to work safely and to exit the space in the event of an emergency.
- 2.7 Using a CO₂ fire extinguisher within a small confined space could adversely affect atmospheric conditions and oxygen content. For these locations, either water or dry chemical extinguishers shall be used.
- 2.8 Oxygen Enriched Atmosphere > 23.5% oxygen.
- 2.9 Oxygen Deficient Atmosphere at < 19.5% oxygen.
- 2.10 Nitrogen - Limiting factor is oxygen deficiency.
- 2.11 Carbon Monoxide - More than 25 ppm.
- 2.12 Hydrogen - Explosive hazards exist.
- 2.13 Methane - Explosive hazards exist.
- 2.14 Hydrogen Sulfide - 10 ppm or 0.001%.
- 2.15 Argon - Limiting factor is oxygen deficiency.
- 2.16 Carbon Dioxide - 5,000 ppm.
- 2.17 Ethyl Benzene - 100 ppm.
- 2.18 Sulfuric Acid - 1 mg/m³.
- 2.19 No person shall enter or work in a dangerous atmosphere without suitable safety precautions and respiratory protection.

3. INSTRUCTIONS

- 3.1 The Job Supervisor (NPPD or Contractor) is directly in charge of the District activity and has the overall responsibility for the safety of the personnel assigned to that activity which may include the delegation of confined space supervision to the Entry Supervisor.
- 3.1.1 It is the duty of each Job Supervisor to see that all reasonable precautions and safeguards are used during confined space operations.
- 3.1.2 The Job Supervisor shall ensure the employees have completed confined space training.
- 3.1.3 The Job or Entry Supervisor shall have completed confined space training.
- 3.1.4 The Job or Entry Supervisor shall determine confined space conditions.
- 3.1.4.1 A Confined Space Permit (CSP) shall be included as part of the work package which has been identified by the Maintenance Planning Group as possibly needing it as part of a Work Order, Configuration Changes, Minor Maintenance (MM), PM, SP, or Surveillance.
- 3.1.4.2 Previously evaluated confined spaces which have been identified as Permit Required Confined Spaces are posted with signs reading **"DANGER - CONFINED SPACE, ENTER BY PERMIT ONLY"**.
- 3.1.4.3 The Job or Entry Supervisor shall evaluate the work area prior to authorizing entry to determine if it may meet the requirements of a confined space, even if it is not posted.
- a. The Job Supervisor shall consider work processes to be performed within the confined space to determine if work processes could create oxygen deficient or hazardous atmospheres.©⁴
- 3.1.4.4 Entry Supervisors shall have direct responsibility for personnel who shall perform work within a confined space and shall review the hazards that may be faced during entry into a confined space, including information on the mode, signs or symptoms, and consequences of an exposure.©⁴
- a. Entry Supervisors shall ensure necessary procedural controls and personal protective equipment are in place before endorsing the Confined Space Permit to authorize a Permit Required Confined Space entry.©^{2,3,4}
- b. Industrial safety and health hazards to be analyzed include:
1. Atmospheric hazards, including toxic chemicals or hazardous materials in or to be used within the space, biological hazards, or oxygen deficiency.
 2. High energy systems which are not protected by double isolation.

3. Energized electrical equipment.
4. Physical hazards (such as engulfment or space configuration hazards).
5. Hot environments.

3.1.4.5 The Job or Entry Supervisor should review the Material Safety Data Sheets (MSDS) for hazards associated with those chemical products in the area or planned for use within the confined space.

- a. Note particularly the MSDS sections on Health Hazards, Control Measures, such as ventilation and Reactivity.
 1. These sections of the MSDS will identify the necessary personnel protective measures, including respirators, protective clothing, gloves, ventilation, etc., as identified by the chemical's manufacturer.
 2. These sections also will identify any other chemicals or situations to avoid in order to prevent adverse chemical reactions from occurring within the confined space.

3.1.5 If, upon evaluating the work area, the Job or Entry Supervisor identifies the area as a potential confined space, the Job or Entry Supervisor shall initiate a Confined Space Permit (CSP) to control work or tasks which shall be performed within confined spaces, even if it is not already part of the prepared work package.

3.1.6 The Job or Entry Supervisor may contact the Industrial Safety Coordinator or designee for assistance in determining whether the conditions require the issuance of a CSP.

3.1.7 The Job or Entry Supervisor should make every reasonable effort to eliminate hazards or the potential for hazardous atmospheres within a space.

3.1.8 The reclassification of a Permit Required Confined Space to a Non-Permit Confined Space can be accomplished through Engineering and/or environmental controls.

3.1.8.1 Reclassification requires that:

- a. All actual or potential atmospheric hazards within the space have been eliminated without entry into the space. The space can be maintained in a safe condition for entry by ventilation.

3.1.8.2 To reclassify a Permit Required Confined Space to a Non-Permit Confined Space, the Job or Entry Supervisor shall:

- a. Ensure the Permit Required Confined Space has had initial atmospheric monitoring and has acceptable entry conditions.

3.1.8.3 Based upon documented testing and conditions established above, the Job or Entry Supervisor may then reclassify the Permit Required Confined Space to a Non-Permit Confined Space.

- a. Supporting data for the reclassification shall be available to an entrant upon request.
- b. Once the above conditions are met, the entrance(s) shall be posted with a CAUTION or WARNING sign.

3.1.9 The Job or Entry Supervisor shall ensure personnel safety controls are established through documentation of requirements on the CONFINED SPACE PERMIT (CSP).³

NOTE – All Emergency Response Teams (i.e., Fire Brigade, EMTs, Confined Space and Rope Rescue, Hazardous Materials, etc.) shall be exempt from the requirements for initiating CSPs during an emergency.

3.1.9.1 The Job or Entry Supervisor shall initiate the Confined Space Permit (CSP), Attachment 1.

- a. Initiate the CSP by providing the following information:
 1. INITIATOR (Section 1) - Job or Entry Supervisor's name.
 2. DATE (Section 2) - Date work is to be started.
 3. JOB FUNCTION NUMBER (Section 3) - Record appropriate function number (i.e., Work Order, Configuration Change, MM, PM, SP, or Surveillance).
 4. JOB SITE LOCATION (Section 4) - Include the building, level (i.e., elevation), system, and area in which the work function is to be performed.
 5. DESCRIPTION OF WORK (Section 5) - Describe the operation or work function to be performed.
 6. ADDITIONAL ITEMS OR ISSUES TO BE ADDRESSED WITHIN THE CONFINED SPACE (Section 6) - Check any conditions on the CSP identified, as necessary, for personnel safety.

WARNING 1 – Monitoring or sampling shall be requested prior to entry into any confined space involving potential atmospheric or environmental hazards, or hot environments. This may be done prior to, or in conjunction with, the Job Supervisor's pre-job review in order to assess the associated health and safety hazards involved. Such hazards may include: oxygen deficient, explosive, or toxic atmospheres; lead or asbestos, high heat, high energy systems, etc.

WARNING 2 – Oxygen levels shall be within the range of 19.5% to 23.5% for CSP work areas. Work areas falling outside this range, whether higher or lower, shall require ventilation be initiated.

WARNING 3 – Any atmospheric readings greater or less than those established in this procedure, require ventilation of the confined space be initiated. The space shall be re-tested and readings shall be within the levels established in this procedure prior to authorizing personnel entry.

NOTE – An attendant is required if testing that requires entry, is done within the Permit Required Confined Space. All rescue, PPE, and safety equipment shall be in place prior to the entry.

7. ENVIRONMENTAL SURVEY DATA (Section 7) - When requested by the Job or Entry Supervisor, the qualified monitoring personnel, generally Radiation Protection Department, or contract personnel shall monitor the location.
 - a) Job or Entry Supervisors and qualified monitoring personnel are not exempt from the issuance of a CSP during their initial safety survey of the job site, and they shall ensure the proper safety precautions are followed.
 - b) ATMOSPHERIC MONITORING REQUIREMENTS
 - 1) Initial monitoring shall be performed by qualified personnel.
 - 2) Monitoring personnel shall complete Section 7, Environmental Survey Data, in the spaces provided for recording the data for oxygen levels, flammable/explosive atmospheres, and toxic atmospheres. (For hot environments, complete Hot Environment Work Permit in Procedure 0.36.1.)

- 3) Continuous Monitoring - After the initial monitoring of a Permit Required Confined Space, the qualified monitor shall provide entry personnel with self-alarming monitoring device which will continuously monitor the atmosphere. They shall explain:
- The monitor's operation.
 - The appropriate location for the monitor during work activities.
 - The need to evacuate the area upon the monitor's alarm.
 - Qualified monitoring personnel need not be continuously present during the operation.
- 4) Periodic Monitoring - Shall be conducted on a periodic (minimum of 8 hour) basis as determined by the Job or Entry Supervisor based upon the recommendations of qualified monitoring personnel or Industrial Safety Coordinator or designee.©^{1,4}
8. MONITOR'S SIGNATURE (Section 8) - Confined space monitor shall sign following completion of initial monitoring and write the time and date.
- a) The performer shall then return the document to the Job or Entry Supervisor.
9. THE CONFINED SPACE IS A: (Section 9) - The Job or Entry Supervisor shall review the data collected in Section 7, ensuring Section 8 is signed, and shall make the determination as to whether the confined space will be a **PERMIT REQUIRED CONFINED SPACE** or a **NON-PERMIT CONFINED SPACE**.

NOTE – The reclassification of a Permit Required Confined Space to a Non-Permit Confined Space can be accomplished through Engineering or Environmental Controls.

- a) If the space is determined, based upon the environmental monitoring survey data, Sections 6 through 7, to be a Permit Required Confined Space, mark the box **PERMIT REQUIRED**.
- b) If based upon the environmental survey data (Sections 6 through 7), the space does not contain atmospheric hazards or does not have the potential to contain any hazard capable of causing death or serious physical harm, the Job or Entry Supervisor determines the space is a Non-Permit Confined Space, mark the box **Non-Permit Confined Space**.

- c) If the confined space is determined to be a Non-Permit Confined Space, the permit will remain in effect until the completion of work (refer to Section 4, Non-Permit Required Confined Spaces).

CAUTION – The Job or Entry Supervisor shall not sign Section 11 until the environmental surveys have been completed, the review of the data collected has been completed, and the determination has been made as to whether the space will be a [] **PERMIT REQUIRED CONFINED SPACE** or a [] **NON-PERMIT CONFINED SPACE**.

10. **PERSONAL PROTECTIVE EQUIPMENT, TOOLS, AND PROCEDURES** (Section 10) - The Job or Entry Supervisor, or designee, shall establish the requirements for respirators, personnel protective clothing, and the tools and equipment required on a job by checking the appropriate sections and equipment required.

NOTE – Any Permit Required Confined Space entry requires entrants to wear a full body harness and lifeline, as noted below.

- a) Identify in the appropriate space(s) provided any necessary safety precautions relative to the prevailing hazards associated with the confined space entry.
- b) The Job or Entry Supervisor may limit the number of authorized entrants allowed within the confined space, authorize specific work groups to work at a given time, or require special equipment, etc.

NOTE – Ensure necessary procedural controls and personal protective equipment are in place before endorsing the Confined Space Permit, to authorize a Permit Required Confined Space entry. ©^{2,3,4}

11. The Job or Entry Supervisor's Review and Approval signature in Section 11 indicates the CSP is filled out correctly and the space is approved for authorized entry.
12. **DEPARTMENT MANAGER'S APPROVAL** (Section 12) - The Department Manager's review and approval of this form shall **ONLY** be required IF personnel are working:
- a) On energized electrical equipment which is not covered under existing station procedures or written instructions, which include safety directions.

13. CSP TERMINATED BY SUPERVISOR AT: (Section 13) - Requires the signature, time, and date that the CSP is terminated by the Job or Entry Supervisor.

a) The CSP shall remain in effect until the job is complete and all personnel have exited the confined space, the Job or Entry Supervisor shall close the permit by signing this section.

b. After the CSP is closed, re-entry into the Permit Required Confined Space is not allowed.

1. If re-entry is required, a new CSP shall be generated.

c. Any modifications to a posted CSP shall be initialed and dated by the Job or Entry Supervisor.

d. During work, a copy of the CSP shall be kept with the work package (i.e., Work Order, Surveillance, etc.), available for review, and it shall remain part of the work package's documentation.

3.1.10 The Job or Entry Supervisor shall initiate the CONFINED SPACE PERMIT SUPPLEMENTARY TIME RECORD FORM for all entries into Permit Required Confined Spaces.

3.1.10.1 The CSP Supplementary Time Record Forms shall be used to maintain a record of the personnel involved in the actual work and who entered the affected area and the controls used to protect them.

NOTE – SPECIAL INSTRUCTIONS (Section 3) - This space is provided for additional special instructions, such as those found in Procedures 0.36.1 and 0.36.2, or changing conditions which may require additional special instructions, etc.

3.1.10.2 The Job or Entry Supervisor shall complete Steps 1 through 4 of the Confined Space Permit (CSP) Supplementary Time Record, Attachment 2.

a. Any Special Instructions shall be recorded on Attachment 2, Section 3, by the Job or Entry Supervisor originating the permit.

b. DATE/TIME IN/TIME OUT RECORD - Record the appropriate information in the spaces provided for both the entrants or attendants.

c. PERIODIC TEST RESULTS (Section 5) - Qualified personnel shall document the monitoring results (on an 8 hour minimum cycle while the CSP is open) and any additional comments in this section.

- 3.1.10.3 The Job or Entry Supervisor shall review and evaluate the CSP Supplementary Time Record Form, noting any additional special instructions necessary for personnel safety prior to personnel entry into a Permit Required Confined Space.
- 3.1.11 The Job or Entry Supervisor shall ensure necessary evaluation MONITORING AND TESTING is conducted prior to authorizing entries to identify hazards, including atmospheric and heat monitoring, if required.©^{1,4}

CAUTION – Care shall be exercised to ensure portable, multi-gas monitoring equipment used at CNS for identifying hazards are calibrated for the type of anticipated hazard involved, correctly scaled, properly used and understood, and readings properly interpreted and applied.©^{1,4}

- 3.1.11.1 Job or Entry Supervisor shall request qualified monitoring personnel to initiate the initial atmospheric or environmental monitoring for possible oxygen deficiency and/or hazardous atmospheres prior to beginning any work within the confined space.©⁴
- a. Any time a Permit Required Confined Space has been sealed closed, and left unoccupied, and is to be re-entered, the Job or Entry Supervisor shall ensure atmospheric monitoring is performed where atmospheric conditions may have changed (during coffee breaks, lunch breaks, etc.).
- 3.1.12 The Job or Entry Supervisor shall ensure proper confined space ventilation.
- 3.1.12.1 Continuous ventilation and monitoring shall be used within the confined spaces to:
- a. Eliminate a hazardous atmospheres; or
- b. Ventilate immediate areas where entrants are or will be working within the confined space which has had a hazardous, or has the potential for a hazardous atmosphere to develop throughout the duration of the entry.
- 3.1.12.2 Whenever a Permit Required Confined Space is being ventilated to remove atmospheres recognized as potential safety or health hazards, continuous ventilation should take place until the air quality is acceptable based on monitoring of the confined space atmosphere.
- 3.1.12.3 If ventilation is not present, continuous monitoring should be used to ensure the area is maintained free of potential atmospheric hazards.

CAUTION – Potentially dangerous concentrations of contaminants may develop during work activities such as welding, painting, chemical cleaning using solvents, sandblasting, scraping, or scaling.

- 3.1.12.4 If ventilation should cease for any reason, monitoring shall be required prior to allowing personnel re-entry, to confirm ventilation has been satisfactorily restored.
- 3.1.13 The Job or Entry Supervisors shall review the duties and responsibilities of their personnel relative to their assigned duties in confined space entries prior to their assignment to those duties.
 - 3.1.13.1 The Job or Entry Supervisors of personnel involved in confined space entries shall ensure required training has been completed.
- 3.1.14 Prior to start of a Permit Required Confined Space entry, the Job or Entry Supervisor shall conduct a pre-job briefing with all personnel involved to ensure they understand their roles during normal work and in an emergency. The briefing shall:©^{1,4}
 - 3.1.14.1 Outline the pertinent specific safety rules and work procedures to be followed, as applicable to the confined space entry. These shall be noted on the Confined Space Permit Supplementary Time Record Special Instructions Section.©^{2,4}
 - 3.1.14.2 Ensure all employees involved understand what is to be accomplished.
 - 3.1.14.3 Ensure entrants know and understand what other personnel working within the area are doing.
 - 3.1.14.4 Include the following:
 - a. Discussion of job and its purpose.
 - b. Access and egress points of the confined space.
 - c. Hazards expected to be encountered.
 - d. Potential hazards which may unexpectedly be encountered.
 - e. Personal protective equipment, tools, and rescue equipment required for the job.
 - f. Review of specific safety instructions.
 - g. Review of emergency rescue plan.
 - h. The means of alerting personnel to exit area in event of an emergency.

- i. Review of CSP and CSP Supplementary Time Record Form prior to entry into Permit Required Confined Space.

3.1.15 The Job or Entry Supervisor shall ensure protection of Permit Required Confined Space entrances.

- 3.1.15.1 When entrance covers are removed, the opening shall be promptly guarded by posting an attendant or properly posting the area to ensure no entries are allowed.
- 3.1.15.2 Railings, temporary covers, or other temporary barriers shall be used to prevent an accidental fall through the opening and prevent unauthorized entry and foreign objects entering the space.
- 3.1.15.3 Covers or access doors should be secured to prevent their falling or closing.

3.1.16 Job or Entry Supervisors shall ensure proper procedures are followed for hot work within a confined space.

- 3.1.16.1 Prior to hot work within a Permit Required Confined Space, a Hot Work Permit per Procedure 0.39 shall be initiated by the Job or Entry Supervisor.
- 3.1.16.2 A Transient Combustibles Permit, per Procedure 0.7.1, shall be reviewed for applicability for the use or storage of flammable or combustible gas cylinders within 35' of any openings or entrances into an occupied Permit Required Confined Space.
- 3.1.16.3 No hot work shall be permitted inside the confined space or within 35' horizontally, above, or below a Permit Required Confined Space opening which may generate flammable, or explosive vapors, gases, or materials unless the space is being continuously mechanically ventilated and monitored for sources of vapors, gases, or materials removed.
- 3.1.16.4 Hot work may not be performed when flammable vapors are > 10% of Lower Explosive (flammable) Limit.
- 3.1.16.5 Welding machines and flammable or combustible compressed gas cylinders shall not be taken into confined spaces.
 - a. Shutoff valves for compressed gas cylinders should be in close proximity of the attendant.
- 3.1.16.6 Welding equipment (hoses, torches, etc.) to be used within a confined space shall:
 - a. Be inspected prior to use and pre-tested for leaks prior to entry into the space.

- b. Shutoff valves for compressed gas cylinders should be closed when work is stopped for a period of time (e.g., breaks, lunch, end of shift, etc.).
 - c. Have hoses removed from confined spaces and have the cylinders shut off (outside of the space) when hot work is completed.
- 3.1.16.7 If arc welding being done within a confined space is stopped for a period of time (i.e., breaks, lunch, end of shift, etc.), personnel shall:
 - a. Remove all electrodes from their holders.
 - b. Place holders where accidental contact can not occur.
- 3.1.17 Job or Entry Supervisors shall ensure proper procedures are followed for use of flammable or toxic materials within a confined space.
 - 3.1.17.1 Use of flammable or toxic materials within confined space (i.e., cleaning, etc.) shall be avoided whenever possible or kept to an absolute minimum.
 - 3.1.17.2 Flammable or toxic materials, when required, may be used as long as adequate forced ventilation with continuous monitoring and approved respiratory protection (as necessary) is being used.
 - 3.1.17.3 All flammable or toxic materials used shall be noted on the CSP and the Transient Combustibles Permit initiated by the Job or Entry Supervisor, if requirements of Procedure 0.7.1 are met.
 - 3.1.17.4 Non-flammable compressed gases (e.g., argon, helium, carbon dioxide, or other mixed welding gases) used within confined space shall be noted on the CSP.
 - 3.1.17.5 Materials shall be kept in their original or approved safety containers.
 - 3.1.17.6 Gasoline or other internal combustion engines shall not be used in a confined space.
 - 3.1.17.7 Any flammable or combustible materials not being used shall be stored in an orderly manner and a safe distance and within a flammable liquids storage cabinet.
 - 3.1.17.8 Aerosol containers (containing flammable, combustible, or toxic materials) shall not be used within a confined space.
 - 3.1.17.9 An adequate number of fire extinguishers of appropriate size and type shall be readily accessible. They shall be conveniently located and clearly identified for use.

- 3.1.18 Job or Entry Supervisors shall ensure proper portable tools, equipment, and temporary services are used within a confined space.
- 3.1.18.1 Specify the necessary Clearance Orders, Caution Tag Orders, and Test Tag Orders. ©^{1,2,3,4}
- a. Unwanted services to a confined space, which present hazards to personnel, shall be positively controlled prior to the authorized entry into the confined space. Services include liquids, electricity, toxic or suffocant substances, flammable or combustible materials, or possibility of an inadvertent operation of equipment or systems within the confined space. ©¹
- 3.1.18.2 Only non-sparking soft-metal hand tools shall be used within Permit Required Confined Space whenever there is a potential for flammable or explosive atmospheres to develop.
- 3.1.18.3 Confined spaces shall be provided adequate lighting for the required work processes.
- a. Portable electrical lighting shall be operated at a maximum of 12 volts or 120 volt electrical supplies protected by ground fault circuit interrupter (GFCI) protectors.
- b. Lighting in explosive, flammable, combustible hazardous atmospheres shall be protected by explosion-proof or dust-tight electrical equipment which cannot supply a source of ignition for explosive vapors or dust.
- c. Lamps (bulbs) should be protected to prevent breakage.
- 3.1.18.4 Portable ladders used for access/egress into the confined space should be kept in place and secured (in a fixed position) at the point where entrants make their entrance to the space.
- 3.1.18.5 If localized areas of toxic dusts, fumes, mists, gases, or vapors are created when welding, cutting, burning, painting, or chemical cleaning, appropriate respiratory protection shall be worn while working within the confined space.
- 3.1.19 The Job or Entry Supervisor shall verify rescue services are available and a means for summoning them are operable before allowing authorized entrants to enter a Permit Required Confined Space. ©⁴
- 3.1.19.1 Any time personnel are raised or lowered into Permit Required Confined Space > 5' deep, a retrieval system (lifting device) or other effective means shall be available.
- 3.1.19.2 When retrieval equipment is used for a Permit Required Confined Space, a full body harness or wristlets with lifeline attached, shall be worn by the entrant.

3.1.19.3 Lifelines shall be long enough to reach from access opening to the bottom or back of a Permit Required Confined Space, including that needed to pass through any labyrinth conditions.

Exception: In situations in which the retrieval equipment would not contribute to the rescue, or would increase the overall risk of entry, or endanger safety related equipment.

3.1.20 The Job or Entry Supervisor shall ensure communications are maintained at all times between the attendant and entrants working within Permit Required Confined Space.

- Communications equipment used within a confined space with a potential for explosive or flammable atmospheres shall be intrinsically safe.

3.1.21 During confined space operations, the Entry Supervisor shall:©⁴

3.1.21.1 Ensure the work performed within a Permit Required Confined Space is done in teams of at least two personnel (entrant and attendant) and is noted on Confined Space Permit.©^{3,4}

3.1.21.2 Ensure authorized entrants use the Confined Space Permit and Supplementary Time Record Form.©²

3.1.21.3 Determine that entry operations remain consistent with terms of entry permit and that acceptable entry conditions are maintained when shifts and/or Job or Entry Supervisors change.

3.1.21.4 Inform contractors of Permit Required Confined Spaces and ensure entry is allowed only through compliance with this procedure.

3.1.21.5 Coordinate entry operations when other personnel are working simultaneously as authorized entrants in the same confined space, so that personnel from one employer do not endanger other personnel.

3.2 Qualified monitoring personnel shall provide atmospheric and/or environmental monitoring when requested by Job or Entry Supervisor to determine if an acceptable entry condition is present and ensure it is maintained during the course of operation. Check at various levels. Allow time for sensors to respond in the atmosphere being tested.

3.2.1 Perform monitoring:

3.2.1.1 On a periodic (minimum of 8 hour) basis, as determined by the Job or Entry Supervisor, based upon the recommendations of qualified monitoring personnel or Industrial Safety Coordinator or designee.©^{1,4}

3.2.1.2 Any time a confined space has been sealed closed, and left unoccupied, and is to be re-entered, where atmospheric conditions may have changed (during coffee breaks, lunch breaks, etc.).

- 3.2.2 Monitoring personnel shall use a direct-reading instrument to monitor the following conditions:
- 3.2.2.1 Oxygen level.
 - 3.2.2.2 Flammable/combustible gases or vapors.
 - 3.2.2.3 Toxic vapors or gaseous materials, if requested.
- 3.2.3 Monitoring personnel shall perform initial monitoring while remaining outside of the Permit Required Confined Space.
- 3.2.3.1 For entries involving a descent into an atmosphere which may be stratified, the space should be tested at a distance of ~ 4' intervals and to each side. If a sampling probe is used, the sampling rate should be slowed to accommodate detector response.
- 3.2.4 Note findings in Section 7, Attachment 1, of the CSP or on the CSP Supplementary Time Record Form, Attachment 2, indicate initial and follow-up periodic testing results.
- 3.2.5 While performing subsequent internal area monitoring, personnel performing this monitoring shall exit the area immediately if a hazardous atmosphere is detected.
- 3.2.5.1 If initial monitoring results are not satisfactory, personnel performing monitoring shall notify the Job or Entry Supervisor and the Industrial Safety Coordinator or designee for additional monitoring and assistance in determining the best method to ventilate the area.
- 3.3 Personnel establishing confined space ventilation shall ensure the proper requirements are met.
- 3.3.1 Air supplied for forced air ventilation shall be from a clean source and shall not increase the hazards within the confined space.
 - 3.3.2 Air exhausted from the confined space shall be vented to an area which does not expose the attendant or other personnel working in the immediate area to the potential hazard and which is adequately far enough from the intake of the ventilation equipment to prevent the reintroduction of exhausted air back into the space.
 - 3.3.3 When using blower-type ventilation equipment, locate the blower so that it does not introduce additional contamination into, or reduce the air quality within the confined space.
 - 3.3.4 Enhance the ventilation process, where possible, by opening other doors or openings to allow for adequate make-up air.
 - 3.3.5 Ventilation equipment used within radiologically contaminated areas shall be approved by Radiation Protection.

- 3.3.6 If ventilation has stopped for any reason, all entrants shall leave the confined space immediately.
- 3.4 Authorized entrants (qualified by training) into confined spaces shall comply with all requirements of this procedure. ©⁴
 - 3.4.1 Personnel shall know the actual or potential hazards that may be encountered during entry, including information on the mode, signs or symptoms, and consequences of an exposure and their possible adverse effects (read any Material Safety Data Sheets). ©^{1,2,3}
 - 3.4.2 Alert the attendant(s) when a warning symptom or other hazardous condition exists.
 - 3.4.3 Personnel shall not enter a Permit Required Confined Spaces unless authorized by the Job or Entry Supervisor and signed in on the CSP. ©⁴
 - 3.4.4 Entrants shall ensure they are in possession of and use Personal Protective Equipment (PPE) and any other safety equipment required on the CSP.
 - 3.4.5 Personnel shall communicate with attendant, as necessary, to enable attendant to monitor entrant's status in the event the space needs to be evacuated.
 - 3.4.6 Personnel shall exit from Permit Required Confined Space, as quickly as possible, whenever:
 - 3.4.6.1 An order to evacuate is given by attendant or Job or Entry Supervisor.
 - 3.4.6.2 Entrants recognize any warning signs or symptoms of exposure to hazardous materials or dangerous situations.
 - 3.4.6.3 Entrants detect a prohibited condition.
 - 3.4.6.4 An evacuation alarm is activated.

3.5 ATTENDANTS

- 3.5.1 An attendant, qualified by training, shall be assigned by the Job or Entry Supervisor and shall be stationed at the access opening or in the immediate area of the Permit Required Confined Space while such space is occupied for any reason.
- 3.5.2 The attendant shall be an alert, competent person, who is physically able to assist in the removal of an entrant from a confined space under emergency conditions.
- 3.5.3 The attendant shall be stationed outside the Permit Required Confined Space and shall not leave the assigned location while entrants are within confined space, except to summon help in an emergency situation, or when properly relieved by another trained attendant. ©⁴

- 3.5.4 The attendant shall always remain outside of the confined space until relieved and never attempt a rescue inside the confined space.
- 3.5.5 The attendant shall monitor the operation and maintain communications with the authorized entrants working inside the confined space and provide necessary support.
- 3.5.6 The attendant shall ensure authorized entrants sign-in and out on the CSP, Attachment 2, upon entering or exiting a Permit Required Confined Space and prohibit unauthorized personnel.
- 3.5.7 An attendant may be assigned other tasks (i.e., FME attendant), provided the tasks do not interfere with the primary responsibility to monitor the entrants in the confined space.
- 3.5.8 The attendant shall order all personnel working within a Permit Required Confined Space to evacuate immediately, when:
- A condition is recognized which is not allowed for in CSP.
 - Changes have been detected in the behavior of personnel working within Permit Required Confined Space.
 - A problem has been detected inside or outside Permit Required Confined Space which endangers those working within the confined space.
 - Attendant must leave the work station for any reason.
 - An air monitoring device used to test air quality alarms while entrants are within a Permit Required Confined Space.
 - If the ventilation equipment fails.
- 3.5.9 In an emergency, the attendant shall:
- 3.5.9.1 Initiate emergency rescue plan.
- 3.5.9.2 Evacuate authorized entrants from Permit Required Confined Space.
- 3.5.9.3 Perform non-entry rescues from outside Permit Required Confined Space.
- 3.5.10 If a hazardous atmosphere is detected while the space is occupied, the attendant shall:
- 3.5.10.1 Have all entrants leave the space immediately.
- 3.5.10.2 Contact the Job or Entry Supervisor to have the space evaluated to determine how the hazardous atmosphere developed.

3.6 Contractor personnel shall:

- 3.6.1 Obtain available information regarding confined space hazards and entry operations from this procedure.
- 3.6.2 Coordinate entry operations with other Entry Supervisors when both entrants will be working within or near the same Permit Required Confined Space.
- 3.6.3 Provide the Industrial Safety Coordinator or designee a copy of their completed Confined Space Permit and inform them of any hazards confronted or created in the confined space, either through debriefing or during entry operation.

3.7 Industrial Safety Coordinator or designee shall:

- 3.7.1 Review Permit Required Confined Space Program annually, using canceled permits retained per this procedure to revise program, as necessary, and ensure personnel participating in entry operations are protected from hazards of Permit Required Confined Spaces.
- 3.7.2 Maintain entry permits for at least 1 year to facilitate the review of the Permit Required Confined Space Program.

3.8 Confined Space and Rope Rescue Team Members shall:

- 3.8.1 Respond to any requests by the Control Room to emergency conditions.
- 3.8.2 Maintain their rescue equipment in an operable condition and keep it readily available.
- 3.8.3 Advise their direct supervision of any non-emergency team assignments for Permit Required Confined Space entry assistance.
- 3.8.4 Provide assistance, when requested and as available, to help establish confined space entry set-ups.
- 3.8.5 When possible, use retrieval systems that do not require entry into the confined space.

4. NON-PERMIT REQUIRED CONFINED SPACES

- 4.1 Spaces previously identified as Non-Permit Required Confined Spaces are posted with a CAUTION or WARNING sign.
- 4.2 For work in Non-Permit Confined spaces, the Job or Entry Supervisor shall initiate a CSP, review initial monitoring data, and determine safe entry requirements.
- 4.3 Danger signs, attendants, and CSP Supplementary Time Record Forms are not required for Non-Permit Confined Space entries.
- 4.4 If continuous ventilation is not present, continuous monitoring should be used to ensure the area is maintained free of atmospheric hazards.

4.5 No hazardous atmospheres or other potential hazards shall be permitted within a Non-Permit Confined Space.

4.5.1 The completed CSP should be posted near the entrance to the confined space.

4.5.2 The CSP shall remain in effect as long as the confined space work is in progress.

4.5.3 These spaces shall pose no actual or potential atmospheric hazard and all other hazards within the space shall have been eliminated.

CAUTION – Non-Permit Confined Spaces may become Permit Required Confined Spaces if conditions change or if work activities introduce contaminants.

4.5.4 If there are changes in use or configuration of a Non-Permit Confined Space that might increase hazards to entrants, the Job or Entry Supervisor shall re-evaluate the space and, if necessary, reclassify the space as Permit Required Confined Space.

4.6 CSP Terminated by Supervisor at (Section 13, Attachment 1) - Requires the signature, time, and date the CSP is terminated by the Job or Entry Supervisor.

4.6.1 When the job is complete and all personnel have exited the confined space, the Job or Entry Supervisor shall close the permit by signing this section.

4.6.2 The completed original shall stay with the work document upon completion of the work process.

4.6.3 A duplicate copy of the CSP should be sent to the Industrial Safety Coordinator or designee.

5. SPECIAL EVOLUTIONS IN PERMIT REQUIRED CONFINED SPACES

5.1 Certain work processes in Permit Required Confined Spaces shall require additional precautions other than those previously mentioned (i.e., procedures and processes used to clean inside storage tanks).

5.1.1 The additional precautions shall be reviewed by the Radiation Protection and Industrial Safety Coordinator or designee to ensure adequate precautionary measures have been addressed.

6. TRAINING

6.1 Job or entry Supervisors, attendants, and authorized entrants shall have successfully completed confined space training prior to performing any confined space activities.

7. COMPLIANCE

7.1 Each individual assigned to a work task covered by a CSP shall acknowledge, understand, and comply with all specific requirements set forth in the CSP.

7.1.1 In Permit Required Confined Spaces, each individual shall sign-in and out, and note the time of each entry or exit (additional CSP Supplementary Time Record Sheets can be used, as necessary).

7.2 Personnel who are not familiar with the PPE, tools, or safety equipment described in the CSP shall notify their Job or Entry Supervisor.

7.2.1 The Job or Entry Supervisor, or designee, shall then explain the special precautions necessary relative to the PPE, tools, or safety equipment and/or other specific requirements.

8. TERMINATION AND FILING

8.1 Termination of the CSP shall coincide with the removal of the hazardous conditions or the completion of a job or task function, at which time the Job or Entry Supervisor shall sign and note the date and time on Attachment 1, Section 13.

9. RECORDS

9.1 Attachments 1 and 2 (when required and attached to a work package) are sent to CNS Records (quality records upon TECO).

ATTACHMENT 2	CONFINED SPACE PERMIT SUPPLEMENTARY TIME RECORD FORM
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ATTACHMENT 2 CONFINED SPACE PERMIT SUPPLEMENTARY TIME RECORD FORM

1. Date:		2. Job Function Number:						
3. Special Instructions:								
4. Name of Individual or Authorized Entrant								
Date		Time In		Time Out				
5. RESULTS								
Toxins (ppm/mg/m ³)								
MONITORING	DATE	TIME	OXYGEN (%)	COMBUSTIBLE (LEL/%)	CO	H2S	OTHER	COMMENTS
PERIODIC								
PERIODIC								
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NOTE – This attachment lists potential Permit Required Confined Spaces at CNS. Contact the Industrial Safety Coordinator or designee to obtain a map and current listing of all confined spaces. The Job or Entry Supervisor shall determine if the area to be entered is a Permit Required Confined Space based upon the conditions noted in this procedure and based upon documented atmospheric testing. To the right of each listed Permit Required Confined Space are known potential hazards which may be expected.

WATER TREATMENT BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Demineralized Water Tank	903'6"	Oxygen Deficiency
Potable Water Tank	928'6"	Oxygen Deficiency

TURBINE BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Lube Oil Storage Tank	882'6"	Oxygen Deficiency
Low Pressure CO ₂ Storage Tank	882'6"	Oxygen Deficiency
Vacuum Priming Tank	882'6"	Oxygen Deficiency
"V" Sump	882'6"	Oxygen Deficiency
"M" Sump	882'6"	Oxygen Deficiency
Condenser (Water Box) - "1"	882'6"	Oxygen Deficiency
Condenser (Water Box) - "2"	882'6"	Oxygen Deficiency
Condenser (Water Box) - "3"	882'6"	Oxygen Deficiency
Condenser (Water Box) - "4"	882'6"	Oxygen Deficiency
Condenser (Water Box) - "5"	882'6"	Oxygen Deficiency
Condenser (Water Box) - "6"	882'6"	Oxygen Deficiency
Condenser (Water Box) - "7"	882'6"	Oxygen Deficiency
Condenser (Water Box) - "8"	882'6"	Oxygen Deficiency
"S" Sump - Sample Room	882'6"	Oxygen Deficiency
Turbine Equipment Heat Exchanger "A"	882'6"	Oxygen Deficiency
Turbine Equipment Heat Exchanger "B"	882'6"	Oxygen Deficiency
Exchanger	903'6"	Oxygen Deficiency

ATTACHMENT 3 SITE CONFINED SPACE LIST

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Lube Oil Reservoir	903'6"	Oxygen Deficiency
Electric Boiler "C"	903'6"	Oxygen Deficiency, Electrical
Electric Boiler "D"	903'6"	Oxygen Deficiency, Electrical
Moisture Separator "A"	932'6"	Oxygen Deficiency
Moisture Separator "B"	932'6"	Oxygen Deficiency
Moisture Separator "C"	932'6"	Oxygen Deficiency
Moisture Separator "D"	932'6"	Oxygen Deficiency
Heater "A1"	909'0"	Oxygen Deficiency, Heat
Heater "A2"	909'0"	Oxygen Deficiency, Heat
Heater "A3"	909'0"	Oxygen Deficiency, Heat
Heater "A4"	909'0"	Oxygen Deficiency, Heat
Heater "A5"	909'0"	Oxygen Deficiency, Heat
Heater "B1"	909'0"	Oxygen Deficiency, Heat
Heater "B2"	909'0"	Oxygen Deficiency, Heat
Heater "B3"	909'0"	Oxygen Deficiency, Heat
Heater "B4"	909'0"	Oxygen Deficiency, Heat
Heater "B5"	909'0"	Oxygen Deficiency, Heat
Turbines - At Access Ports	932'6"	Oxygen Deficiency, Moving Blades
Exciter	932'6"	Oxygen Deficiency, Combustible (H ₂), Electrical

CO₂ - Carbon Dioxide

H₂ - Hydrogen

REACTOR BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Sump "B"	NE Quad 859'9"	Oxygen Deficiency
Sump "D"	SE Quad 859'9"	Oxygen Deficiency
Sump "A"	NW Quad 859'9"	Oxygen Deficiency
Sump "C"	SW Quad 859'9"	Oxygen Deficiency
Torus	881' - 859'9"	Oxygen Deficiency
Primary Containment (Drywell)	DW-FLG AREA - 888'	Oxygen Deficiency

DIESEL GENERATOR BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
"DG1" Sump	903'6"	Oxygen Deficiency, Water
"DG2" Sump	903'6"	Oxygen Deficiency, Water

INTAKE STRUCTURE BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Manway near Pump "A" in Service Water Pump Room	903'6"	Oxygen Deficiency, Toxic, Water
Circulating Water Tunnel	~ 881'	Oxygen Deficiency, Toxic, Water

RADWASTE BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Waste Sample Tank "A"	877'6"	Oxygen Deficiency
Waste Sample Tank "B"	877'6"	Oxygen Deficiency
Waste Surge Tank	877'6"	Oxygen Deficiency
Waste Collector Tank	877'6"	Oxygen Deficiency
Floor Drain Tank	877'6"	Oxygen Deficiency
Chemical Waste Tank	877'6"	Oxygen Deficiency
Floor Drain Sample Tank	877'6"	Oxygen Deficiency
Laundry Drain Tank "A"	877'6"	Oxygen Deficiency
Laundry Drain Tank "B"	877'6"	Oxygen Deficiency
Condensate Phase Separator "A"	877'6"	Oxygen Deficiency
Condensate Phase Separator "B"	877'6"	Oxygen Deficiency
Waste Sludge Tank	877'6"	Oxygen Deficiency
Spent Resin Tank	877'6"	Oxygen Deficiency
Lab Drain Tank (1)	877'6"	Oxygen Deficiency
Lab Drain Tank (2)	877'6"	Oxygen Deficiency
Condensate Backwash Transfer Tank	877'6"	Oxygen Deficiency
Waste Hopper "A"	918'-934'	Oxygen Deficiency

ATTACHMENT 3 SITE CONFINED SPACE LIST

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Waste Hopper "B"	918'-934'	Oxygen Deficiency
Cement Silo	918'-934'	Oxygen Deficiency
Wash Down Collection Tank	877'6"	Oxygen Deficiency
"H" Sump	877'6"	Oxygen Deficiency
"K" Sump	877'6"	Oxygen Deficiency
"J" Sump	877'6"	Oxygen Deficiency
Vault - Waste Collection Filters	934'	Oxygen Deficiency
Waste Demineralizer (1)	934'	Oxygen Deficiency
Waste Demineralizer (2)	934'	Oxygen Deficiency
Condensate Filter Tank "1B"	934'	Oxygen Deficiency
Condensate Filter Tank "1C"	934'	Oxygen Deficiency
Condensate Filter Tank "1D"	934'	Oxygen Deficiency
Condensate Filter Tank "1E"	934'	Oxygen Deficiency

AUGMENTED RADWASTE BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Chemical Sampling Tank	877'6"	Oxygen Deficiency
Distillate Tank	877'6"	Oxygen Deficiency
Unfired Steam Generator	877'6"	Oxygen Deficiency
Catalytic Recombiner "A"	877'6"	Oxygen Deficiency, Combustible (H ₂)
Catalytic Recombiner "B"	877'6"	Oxygen Deficiency, Combustible (H ₂)
Dryer "A"	877'6"	Oxygen Deficiency
Dryer "B"	877'6"	Oxygen Deficiency
Concentrator Feed Tank	877'6"	Oxygen Deficiency
Concentrator Waste Tank	877'6"	Oxygen Deficiency
Charcoal Tank "1A"	918'6"	Oxygen Deficiency, Combustible
Charcoal Tank "1B"	918'6"	Oxygen Deficiency, Combustible
Charcoal Tank "1C"	918'6"	Oxygen Deficiency, Combustible
Charcoal Tank "1D"	918'6"	Oxygen Deficiency, Combustible
Charcoal Tank "1E"	918'6"	Oxygen Deficiency, Combustible

ATTACHMENT 3 SITE CONFINED SPACE LIST

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Charcoal Tank "1F"	918'6"	Oxygen Deficiency, Combustible
Concentrator (1)	918'6"	Oxygen Deficiency
Concentrator (2)	918'6"	Oxygen Deficiency

YARD AREA

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Diesel Storage Tank (1A)	903'6"	Oxygen Deficiency, Combustible, Toxic
Diesel Storage Tank (1B)	903'6"	Oxygen Deficiency, Combustible, Toxic
Diesel Storage Tank (1A) Space Between Tank and Surface Entry	903'6"	Oxygen Deficiency, Combustible
Diesel Storage Tank (1B) Space Between Tank and Surface Entry	903'6"	Oxygen Deficiency, Combustible
"Y" Sump	903'6"	Oxygen Deficiency, Combustible (H ₂)
"Z" Sump	903'6"	Oxygen Deficiency, Water, Electrical
Condensate Storage Tanks	903'6"	Oxygen Deficiency
FP Tank (A)	903'6"	Oxygen Deficiency, Water
FP Tank (B)	903'6"	Oxygen Deficiency, Water
Electrical Vault Near Light Pole #73	903'6"	Oxygen Deficiency, Electrical, Water
Waste Oil Storage Tank	903'6"	Oxygen Deficiency, Combustible
Fuel Oil Tank	903'6"	Oxygen Deficiency, Combustible
RRMG Lo Drain Tank	903'6"	Oxygen Deficiency
Condensate Tank	903'6"	Oxygen Deficiency
Seep Drain-Southwest of Circulating Water Intake	903'6"	Oxygen Deficiency, Toxic, Water
Manhole-Southeast Corner of Protected Area	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-South of Dead Hydrant, Near Light Pole #76	903'6"	Oxygen Deficiency, Electrical, Water
Electrical Vault-Near Weld Shop	903'6"	Oxygen Deficiency, Toxic, Electrical, Water

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Seep Drain-Near Overhead Door of Weld Shop	903'6"	Oxygen Deficiency, Toxic, Water
Electrical Vault-Southeast of Weld Shop Overhead Door	903'6"	Oxygen Deficiency, Toxic, Electrical, Water
Manhole-Near Hydrogen Storage Bldg and Saw Shop	903'6"	Oxygen Deficiency, Combustible
Seep Drain-Near Overhead Door of Water Treatment	903'6"	Oxygen Deficiency, Toxic, Water
Manhole-Near Circulating Water Intake Structure	903'6"	Oxygen Deficiency, Combustible
Seep Drain-Between N ₂ Bottles and Circulating Water Intake Structure	903'6"	Oxygen Deficiency, Toxic, Water
Seep Drain-Between Overhead Door of Circulating Water Intake Structure and Diesel Generator Building	903'6"	Oxygen Deficiency, Toxic, Water
Electrical Vault-Northeast of Diesel Generator #1	903'6"	Oxygen Deficiency, Combustible
"W" Sump-Northeast of Diesel Generator Building	903'6"	Oxygen Deficiency, Combustible
"Y" Electrical Vault-Northeast of Diesel Generator Building and Near N ₂ Cylinders	903'6"	Oxygen Deficiency, Combustible
Seep Drain-Northeast Area of Yard, North of Truck Bay Door	903'6"	Oxygen Deficiency, Toxic, Water
Manhole-Near West Entrance of MPF Doors	903'6"	Oxygen Deficiency, Toxic, Water
Seep Drain-Near Entrance of MPF	903'6"	Oxygen Deficiency, Toxic, Water
Manhole-Near West Entrance of MPF Adjacent to Fire Hydrants	903'6"	Oxygen Deficiency, Toxic, Water
Seep Drain-Northeast of 903 TG Doors	903'6"	Oxygen Deficiency, Toxic, Water
Manhole-North of MPF	903'6"	Oxygen Deficiency, Electrical, Water
Electrical Vault-Inside Main Transformer Yard	903'6"	Oxygen Deficiency, Toxic, Water, Electrical
Seep Drain-Near Radioactive Material Building on North End of Turbine Generator Building	903'6"	Oxygen Deficiency, Toxic, Water

ATTACHMENT 3	SITE CONFINED SPACE LIST
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COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Manhole-Northeast Corner of Yard, Near Light Pole #12	903'6"	Oxygen Deficiency, Toxic, Water, Electrical
Fuel Oil Tank	903'6"	Oxygen Deficiency, Combustible

N₂ - Nitrogen

OFF-GAS BUILDING

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Filter Pit	903'6"	Oxygen Deficiency, Combustible

OUTER YARD AREA

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Manhole-Sewer Lift Station #ST-I-1	903'6"	Oxygen Deficiency, Combustible, Biological
Manhole-Old Pump Station	903'6"	Oxygen Deficiency, Combustible, Biological
Manhole-North of Eastern Lagoon	903'6"	Oxygen Deficiency, Combustible, Biological
Manhole-North Side of Northern Most Electrical Tower	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-South Side of Southern Most Electrical Tower	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Pump for Potable Water Supply	903'6"	Oxygen Deficiency, Electrical, Water
Electrical Vault-Between Electrical Towers	903'6"	Oxygen Deficiency, Electrical, Water
Electrical Vault-North Side of Switchyard	903'6"	Oxygen Deficiency, Electrical, Water
Pits (2)-North Side of Switchyard	903'6"	Oxygen Deficiency, Electrical, Water
Electrical Vault-Near Lift Station	903'6"	Oxygen Deficiency, Toxicity, Electrical, Water
Manhole-Outside Gate and North of Lift Station	903'6"	Oxygen Deficiency, Combustible, Biological

YARD AREA - SECURITY ZONE

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Manhole-Near Light Pole #37	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Fire Barn	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #60 in Zone 1	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #69 in Zone 1	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Adjacent to West Corner of Warehouse	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Adjacent to West Side of Warehouse	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Adjacent to South Corner of Warehouse	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Adjacent to Southeast Side of Flammable Liquid Storage Building	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #30	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-West of ERP Tower	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Southwest of Condensate Storage Tank "A"	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-East of Condensate Storage Tank "A"	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #19	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-East of Fabrication Shop	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #14	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #11	903'6"	Oxygen Deficiency, Electrical, Water
Sump pit for Condensate "B" Tank-Near Light Pole #9	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Adjacent to "A" Fire Storage Tank and Near Light Pole #7	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #5	903'6"	Oxygen Deficiency, Electrical, Water
Manhole-Near Light Pole #9	903'6"	Oxygen Deficiency, Electrical, Water
Orange Water Tank Near Fire Training Pad	895'	Oxygen Deficiency, Water
Orange Water Tank Near Fire Training Pad	895'	Oxygen Deficiency, Water

MULTI-PURPOSE FACILITY

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
MPF Shield Area Vaults	903'6"	Oxygen Deficiency

TRUCK BAY

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
Vault-Radwaste Storage	903'6"	Oxygen Deficiency

AUGMENTED OFF-GAS ROOM

COMPONENT/LOCATION	ELEVATION	POTENTIAL HAZARDS
"BB" Sump	903'6"	Oxygen Deficiency, Electrical
"CC" Sump	903'6"	Oxygen Deficiency, Electrical
Glycol Cooler Tank (A): -30	903'6"	Oxygen Deficiency, Glycol
Glycol Cooler Tank (B): -30	903'6"	Oxygen Deficiency, Glycol
Glycol Cooler Tank (A): -34	903'6"	Oxygen Deficiency, Glycol
Glycol Cooler Tank (B): -34	903'6"	Oxygen Deficiency, Glycol
Post Recombiner (A)	877'6"	Oxygen Deficiency, Combustible (H ₂)
Post Recombiner (B)	877'6"	Oxygen Deficiency, Combustible (H ₂)
Unfired Steam Generator Receiver	877'6"	Oxygen Deficiency

1. DEFINITIONS

- 1.1 Acceptable Entry Conditions - Conditions that shall exist in a Permit Required Confined Space to ensure safe entry into and work within a confined space.
- 1.2 Alternative Entry Procedures - The process used to reclassify a Permit Required Confined Space to a Non-Permit Confined Space.
- 1.3 Attendant - A trained individual stationed outside of Permit Required Confined Space who monitors authorized entrants and performs attendant's duties assigned by this procedure.
- 1.4 Authorized Entrant - Personnel who are trained and qualified and are designated by the Job or Entry Supervisor to enter a Permit Required Confined Spaces.
- 1.5 Confined Space - Any space that:
 - 1.5.1 Is large enough and so configured that an employee can bodily enter and perform assigned work.
 - 1.5.2 Has a limited means of entry or exit (storage tanks, drums, bins, boilers, ventilation or exhaust ducts, sumps or sewers, underground utility vaults, manholes, tunnels, pipelines, and open top spaces more than 4' in depth such as pits, tubs, vaults, valves, and vessels).
 - 1.5.3 Is not designed for continuous employee occupancy.
- 1.6 Confined Space Permit (CSP) - Attachment 1 which authorizes specific employees to enter a Permit Required Confined Space and is completed by a trained Entry or Job Supervisor.
- 1.7 Entry - Action by which a person passes through an opening into a Permit Required Confined Space. Entry is considered to have occurred as soon as any part of entrant's body breaks the plane of an opening into the space.
- 1.8 Entry Supervisor - The trained person responsible for determining if acceptable conditions are present for an entry into a confined space. Entry Supervisor oversees the operation and terminates the entry into confined spaces. Only a trained Job or Entry Supervisor may reclassify a Permit Required Confined Space to a Non-Permit Required Confined Space.
- 1.9 Evaluation Testing - The atmospheric testing and evaluation of conditions that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions specified for the space.

- 1.10 Immediately Dangerous to Life or Health (IDLH) - Any condition that poses 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.
- 1.10.1 OSHA mandates that for any IDLH Confined Space entry, including fire entry, two personnel enter, and two personnel be in SCBAs ready to enter as safety attendants.
- 1.11 Job Supervisor - The individual (NPPD or Contractor) directly in charge of any District activity and held responsible for the safety of the personnel assigned to that activity and the public. Only a trained Job or Entry Supervisor may reclassify a Permit Required Confined Space to a Non-Permit Required Confined Space.
- 1.12 Hazardous Atmosphere - An atmosphere which exposes employees to a risk of death, incapacitation, injury, or acute illness from one or more of the following causes:
- 1.12.1 An atmospheric oxygen concentration below 19.5% or above 23.5%.
- 1.12.2 A flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL).
- 1.12.3 An airborne combustible dust at a concentration that obscures vision at a distance of 5' (1.52 m) or less.
- 1.12.4 Any atmospheric condition recognized as immediately dangerous to life or health.
- 1.12.5 An atmospheric concentration of any substance for which a permissible exposure limit (PEL) is published in Subpart Z of 29 CFR Part 1910, and could result in employee exposure in excess of its permissible limit(s). This information is found on the Internet at http://www.osha-slc.gov/OshStd_data/1910_1000_TABLE_z-1.html. When an air contaminant for which OSHA has not determined a PEL may be present in the permit confined space atmosphere, consult other sources of information such as Material Safety Data Sheets for guidance in establishing the acceptable environmental conditions for entry and necessary Personal Protective Equipment (PPE).
- 1.13 Hotwork - Any activity involving fire-producing operations such as burning, cutting, heating, riveting, welding, or similar operations; may also include spark-producing operations such as grinding, drilling, and abrasive blasting. Requires a Hotwork Permit (Procedure 0.39).
- 1.14 Non-Permit 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. It is posted with a CAUTION or WARNING sign.

- 1.15 Permit Required Confined Space - A confined space that has one or more of the following characteristics, and is identified as a Permit Required Confined Space. It is posted with the sign reading "**DANGER - CONFINED SPACE, ENTER BY PERMIT ONLY**".
- 1.15.1 Contains or has the potential to contain recognized serious safety or health hazards, including:
- 1.15.1.1 Physical or atmospheric hazard(s) that may expose personnel to risk of death, incapacitation, impairment of ability for self rescue, injury, or acute illness.
 - 1.15.1.2 Contains materials that have potential for engulfing an entrant.
 - 1.15.1.3 Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.
- 1.16 Rescue Service - At CNS, the Rope Rescue Team is responsible for rescuing employees from Permit Required Confined Spaces.
- 1.17 Confined Space Monitor - Person(s) specifically trained on the use of atmospheric sampling/analysis equipment and other monitoring equipment as necessary. Chemistry/RP Departments are designated to monitor the space.

2. REFERENCES

2.1 COMMITMENTS AND OBLIGATIONS MATRIX

COMMITMENTS AND OBLIGATIONS	AFFECTED STEPS
QAPD	None
© ¹ IEIN 85-87, Hazards of Inerting Atmospheres	Affects Steps 3.1.9.1a.7.b)4), 3.1.11, 3.1.14, 3.1.18.1, 3.1.18.1a, 3.2.1.1, 3.4.1, and CAUTION prior to Step 3.1.11.1
© ² SER 17-88, Electrocutions and Injuries Incurred While Working Near Energized Electrical Equipment	Affects Steps 3.1.4.4a, 3.1.14.1, 3.1.18.1, 3.1.21.2, 3.4.1, NOTE prior to Step 3.1.9.1a.11
© ³ SER 23-88, Work on Wrong Train of Radwaste Evaporator Results in Personnel Injuries	Affects Steps 3.1.4.4a, 3.1.9, 3.1.18.1, 3.1.21.1, 3.4.1, NOTE prior to Step 3.1.9.1a.11
© ⁴ SER 35-88, Inadequate Work Controls, Work Practices and Rescue Preparations Contribute to Fatality	Affects Steps 3.1.4.3a, 3.1.4.4, 3.1.4.4a, 3.1.9.1a.7.b)4), 3.1.11, 3.1.11.1, 3.1.14, 3.1.14.1, 3.1.18.1, 3.1.19, 3.1.21, 3.1.21.1, 3.2.1.1, 3.4, 3.4.3, 3.5.3, NOTE prior to Step 3.1.9.1a.11, and CAUTION prior to Step 3.1.11.1

2.2 CODES AND STANDARDS

2.2.1 29CFR1910.146, Occupational Safety and Health Administration's, Confined Space Standard.

2.2.2 National Fire Protection Association, Fire Protection Guidelines on Hazardous Materials.

2.2.2.1 NFPA Standard 49.

2.2.2.2 NFPA Standard 325M.

2.2.2.3 NFPA Standard 491M.

2.2.2.4 NFPA Standard 704.

2.3 PROCEDURES

2.3.1 Administrative Procedure 0.7.1, Control of Combustibles.

2.3.2 Administrative Procedure 0.36, Industrial Safety Procedure.

2.3.3 Administrative Procedure 0.36.1, Heat Stress Prevention Program.

2.3.4 Administrative Procedure 0.36.2, Above Water and Underwater Work Activities.

2.3.5 Administrative Procedure 0.36.5, Lead Exposure Control Program.

2.3.6 Administrative Procedure 0.36.6, Monitoring for Industrial Gases.

2.3.7 Administrative Procedure 0.39, Fire Watches.

2.4 MISCELLANEOUS

2.4.1 INPO 83-032, Good Practice OA-101, Safe Work Procedure for Enclosed Volumes.

2.4.2 NPPD Safety and Health Manual, SPP-02.