

<b>CH2M HILL Hanford Group, Inc.</b>	<b>Manual</b>	<b>ESHQ</b>
<b>PERMIT REQUIRED CONFINED SPACE</b>	<b>Document</b>	<b>TFC-ESHQ-S_IH-C-04, REV C-1</b>
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[Ownership Matrix](#)

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## 1.0 PURPOSE AND SCOPE

This procedure describes the process used to perform permit required confined space entry, label confined spaces, downgrade permit required confined spaces to non-permit confined spaces, and to work in confined spaces that have only atmospheric hazards. (Confined space is defined in Section 5.0.) This procedure is based on the requirements of OSHA 29 CFR 1910.146, "Permit-Required Confined Spaces."

Non-permit required confined space entry requires the completion of a confined space hazard identification form (A-~~6004-440~~~~6001-798~~) and the use of a Worksite Hazard Analysis.

This procedure applies to Tank Farm Contractor (TFC) personnel and subcontractors.

NOTE: This procedure does not address the policies or internal procedures of the Hanford Fire Department in their role as the designated emergency rescue service.

## 2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

## 3.0 RESPONSIBILITIES

### 3.1 Authorized Entrants

Understand the hazards identified for the confined space (including the mode, signs, symptoms, and consequences of exposure) and how the hazards will be mitigated.

### 3.2 Attendant(s)

- Understand the hazards that may be encountered during entry and the mode, signs, symptoms, and consequences of exposure.
- Maintain awareness of possible behavioral effects of hazard exposure in authorized entrants
- Monitor activities inside and outside to determine if it is safe for entrants to enter or remain in confined space.

### 3.3 Entry Supervisor

Understands the hazards that may be encountered during confined space entry, including the mode, signs, symptoms, and consequences of exposure and how the hazards will be mitigated.

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.

### 3.4 Facility Manager

Ensures that all work areas within their area of responsibility are surveyed to identify confined spaces.

### 3.5 Facility/Line/Construction Manager and Supervisor

Ensures that when subcontractor employees (or employees from multiple groups) perform confined space entries, coordination of the entries is controlled per the requirements stated in this procedure.

### 3.6 Safety and Health

- Performs and documents confined space hazard evaluations.
- Assists management in determining confined space retrieval systems, as necessary.
- Provides atmospheric testing equipment that is calibrated and maintained in accordance with the industrial hygiene procedures and the manufacturer's operating manual.
- Operates atmospheric testing equipment in accordance with the industrial hygiene procedures and the manufacturer's operating manual.
- Maintains Confined Space Hazard Identification forms and the records resulting from prior evaluations and surveys of the workplace for confined spaces.

### 3.7 Subcontractor

- Obtains available information regarding confined space hazards and entry operations from the line organization having control of the confined space.
- Coordinates with facility operations, safety personnel, and other parties in the identification, mitigation, and control of hazards pertaining to confined spaces.
- Coordinates entry operations with the line organization and other workforces when both subcontractor employees and other employees will be working in or near a confined space.
- Use this confined space program. If another confined space program is used it must be evaluated and approved by Industrial Safety programs in accordance with the On-Site Work Provisions.

### 3.8 Training Manager

Ensures appropriate training programs are available for permit required confined space attendants, entrants, and supervisors.

**4.0 PROCEDURE**

(7.1.1,7.1.2)

**4.1 Initial Assessment and Identification of Confined Spaces**See [Figure 1](#) for procedure flowchart.

NOTE: All identified confined spaces are assigned to a facility manager as the operational landlord with the responsibilities for the confined space classification, labeling, inventory, and related record keeping requirements.

Facility Manager

1. Ensure that work places are evaluated to determine if there are any confined spaces.

Facility Manager/  
Construction  
Manager

2. If a potential confined space has been created as a result of a modification, construction, or maintenance activity, use the definition in Section 5.0 to determine if the space is a permit required confined space.

NOTE: During construction activities, ownership and classification of temporary or newly constructed confined spaces are the responsibility of the construction manager.

3. If a new confined space is identified, or if a hazard evaluation is to be performed on an existing confined space, use the Confined Space Hazard Identification Form (~~A-6004-440~~6001-798 or equivalent) to complete the following substeps:

- a. Do not permit entry into the confined space until a hazard evaluation is performed, the space is classified, and the appropriate controls are in place.

NOTE: If a confined space has not had a hazard evaluation the space may be managed as a Permit-Required Confined Space until a hazard evaluation is performed and documented. Entry into permit-required confined space is described in Section 4.4.

- b. Request industrial safety/hygiene to perform a confined space hazard evaluation.

Safety and Health

- c. Complete a hazard evaluation using the Confined Space Hazard Identification Form (~~A-6004-440~~6001-798).
- d. Maintain the completed Confined Space Hazard Identification form.

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Facility Manager/  
Construction  
Manager

- e. If the space was identified as a permit-required confined space (i.e., any one of the boxes in Section 3, item 2, of [A-6004-440](#) ~~6001-798~~ are checked), post the following label on all potential entry points:

**DANGER - PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER WITHOUT PERMIT.**

NOTE: If the confined space dimensions or configuration do not permit conventional attachment of signs, then other effective means may be used to inform employees of the space location and hazards.

Construction  
Manager

4. If the confined space was a consequence of a construction activity, complete the following substeps:
- a. If the confined space no longer meets the definition of a confined space, remove the postings.
- b. If construction is complete and the confined space still exists, transfer the space to the facility manager.

Facility Manager

- c. If confined space has been transferred from a construction manager, return to step 4 and repeat subsequent steps.

## 4.2 Training/Qualifications (7.1.3)

See [Figure 2](#) for procedure flowchart.

Line Manager/  
Construction  
Manager

1. Ensure attendants, entrants, supervisors, atmospheric testing personnel, industrial health/industrial safety, radiological control personnel and other entry team members are provided initial confined space training (including requirements and availability of this procedure) before performing their assigned duties for permit-required confined space entries.

NOTE 1: Course #020130, Confined Space Entry, satisfies this requirement and the training records retention requirement.

NOTE 2: Course 354020 is required for individuals who will lead pre-job discussions concerning entry into confined spaces (see [Attachment B](#)), and as the retrain course every three years for all confined space entry team members.

2. Ensure subcontractor employees who have confined space training from other sources provide documentation of completed confined space entry training and equivalency is established through the Training Department.

3. Ensure entry team members are appropriately trained for the following conditions:
  - The permit specifies additional training requirements
  - There is a change in assigned duties
  - A change in permit-required confined space operations introduces a new hazard for which the employee has not been trained
  - Inadequacies in the employee's knowledge in the use of this procedure or entry procedures have been identified.
4. Ensure the designated atmospheric testing person is trained on the proper use, application, and limitations of the instrumentation to be used, including:
  - Field calibration and performance checks of the instruments
  - Anticipated hazardous contaminants
  - Instrument operation
  - Knowledge of alarm set points and actions required when an alarm occurs
  - Related documentation requirements.

#### 4.3 Emergency Response and Rescue for Permit-Required Confined Spaces

See [Figure 3](#) for procedure flowchart.

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| Line Manager/<br>Construction<br>Manager | <ol style="list-style-type: none"> <li>1. Provide the Hanford Fire Department (the designated rescue service) with access to all permit-required confined spaces from which rescue may be necessary; using <a href="#">A-6001-250</a> to notify the Hanford Fire Department.</li> <li>2. Unless not required on the Confined Space Entry Permit, provide non-entry, confined space retrieval/rescue equipment that meets the requirements of 29 CFR 1910.146(k)(3).</li> </ol> |
| Safety and Health                        | <ol style="list-style-type: none"> <li>3. Document retrieval/rescue plan on the Confined Space Entry Permit (<a href="#">A-6003-871</a>). If it is determined that retrieval/rescue equipment would increase the overall risk of entry, or would not contribute to the rescue of the entrant, include this determination on the permit.</li> </ol>   |
| Employee                                 | <ol style="list-style-type: none"> <li>4. Perform non-entry retrieval/rescue in accordance with retrieval/ rescue plan when confined space entrants cannot exit under their power.</li> </ol>  |

#### 4.4 Permit-Required Confined Space Entry

This section describes the process for entering into permit-required confined spaces. Each permit for confined space entry applies to a specific operation, location, work package, and time period. The duration of the permit may not exceed the time required to complete the assigned task, job as identified on the permit or shift. If planned work will continue for more than one shift, the permit may be approved for subsequent re-entries, provided all of the following conditions apply:

- No new hazards are identified or introduced into the space
- There are no changes in work scope or permit prescribed work control
- Pre-entry testing is performed and acceptable entry conditions exist
- Re-entries are authorized and documented on the confined space entry permit.

If the re-entry conditions are not met, a new permit is required.

See [Figure 4](#) for procedure flowchart.

Manager/Supervisor  
Construction  
Manager

1. As part of the work planning process described in [TFC-OPS-MAINT-C-01](#), identify the need to enter a potential confined space.

NOTE: TFC-OPS-MAINT-C-01 specifies how subcontractor and multi-contractor entries into confined spaces shall be managed to comply with contractor requirements stated in 29 CFR 1910.146(c)(8).

2. Determine if a Confined Space Hazard Identification Form ([A-6004-4406001-798](#), or equivalent) has been completed for the space to be entered.
3. If a Confined Space Hazard Identification Form has not been completed, complete Section 4.1, step 4, and proceed to the next step in this section.
4. If the Confined Space Hazard Identification Form identifies the space as a Non-Permit Confined Space, complete the following substeps:
  - a. Stop. Do not complete this section.
  - b. Use a Worksite Hazard Analysis document evaluation and controls for entry.
5. If the Confined Space Hazard Identification Form identifies the space as a Permit Required Confined Space, contact safety and health and request a Confined Space Entry Permit to be completed for the space to be entered.

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| Industrial Safety/<br>Hygiene                | <p>6. Participate in the Job Hazard Analysis process for development of a Safety Plan in accordance with <a href="#">TFC-ESHQ-S_SAF-C-02</a>.</p> <p>7. If the confined space hazards identified during the Job Hazard Analysis process can be eliminated per 29 CFR 1910.146(c)(7), complete the following substeps:</p> <p style="padding-left: 40px;">a. If the space qualifies for potential downgrading, complete Sections 4.7 or 4.8.</p> <p>8. If the confined space hazards cannot be eliminated, complete a Confined Space Entry Permit (<a href="#">A-6003-871</a>) for the space to be entered. The permit shall address all of the following (in addition to all required fields):</p> <ul style="list-style-type: none"> <li>• Measures used to eliminate or control all hazards identified in section 2 of permit</li> <li>• Special atmospheric monitoring requirements (i.e., stratified sampling)</li> <li>• Rationale for not using retrieval systems/methods, if applicable.</li> </ul> |
| Facility Manager/<br>Construction<br>Manager | <p>9. Review and, if appropriate, approve the Confined Space Entry Permit by signing and dating in Section 9.</p> <p>10. As part of the work planning process described in <a href="#">TFC-OPS-MAINT-C-01</a>, ensure worker and safety professional involvement in planning work activity and controls associated with confined space entry (including effective walk-down by affected individuals).</p> <p>11. Designate a qualified/trained entry supervisor to authorize, oversee, and terminate entry operations.</p>   |
| Industrial Safety/<br>Hygiene                | <p>12. Provide technical support during step 10.</p>   |
| Entry Supervisor                             | <p>13. Verify all controls, work instructions, and equipment prescribed in the Confined Space Entry Permit are ready for implementation. (See <a href="#">Attachment A</a> for hazard control implementation and elimination practices.)</p>   |

14. Notify the Hanford Fire Department at least 24 hours prior to an entry into a permit-required confined space. Use form [A-6001-250](#) to notify Hanford Fire Department and include the following information:

- Time of the planned entry
- Location of the space
- Anticipated hazards
- Special considerations for rescue from the space.

15. Assign qualified and trained individual personnel as confined space entrant(s) and attendant(s).

NOTE: Qualifications include training in any retrieval systems that may be utilized.

16. Brief all entry team members and support personnel on the hazards associated with the entry and the details of the permit requirements per [Attachment B](#).

NOTE: Briefings are to be in accordance with [TFC-OPS-MAINT-C-02](#).

17. Ensure there is a single attendant responsible for monitoring a single space.

18. Ensure that any employee, who enters the confined space, or that employee's authorized representative, is provided an opportunity to observe the pre-entry testing and any subsequent testing and monitoring of the confined space.

Employees

19. Review the requirements of the Confined Space Entry Permit.

Industrial Hygiene/  
Atmospheric Testing  
Person

20. Conduct atmospheric testing as prescribed in the Confined Space Entry Permit by completing the following substeps:

- a. Perform Section 4.6. (See [Attachment C](#))
- b. Record results on the permit and on the Direct Reading Instrument Form (DRI) (or equivalent form that documents calibration verification data) in accordance with [TFC-ESHQ-IH-STD-03](#).

Entry Supervisor

21. Authorize entry into the confined space by completing the following substeps:
  - a. Verify all pre-entry activities have been completed.
  - b. Verify, pre-entry atmospheric monitoring (if applicable) of the space indicates that conditions are within acceptable limits.
  - c. Verify all sections of the Confined Space Entry Permit have been completed.
  - d. Verify the Confined Space Entry Permit contains all required signatures.
  - e. Verify Hanford Fire Department is available to perform rescue service and that the means to summon the Department (i.e., radio, cell phone) are available and operable.
  - f. Verify the Hanford Fire Department is at the site before beginning the entry, if required by the Confined Space Entry Permit.
  - g. Sign the Confined Space Entry Permit in section 9.
22. Enter the date/time that the confined space entry activities started on the Confined Space Entry Permit. Make the entry in section 1 on the line labeled "Permit Valid From..."
23. Post completed Confined Space Entry Permit at the entrance(s) of the confined space.
24. If any of the following conditions apply, terminate the entry immediately:
  - Acceptable entry conditions, in or near the space, are not present.
  - The Hanford Fire Department is unavailable or becomes unavailable for response.
25. If the entry must be terminated due to unacceptable entry conditions or unavailability of the Hanford Fire Department, complete Section 4.5 to terminate the entry and cancel the permit.

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26. Complete the following substeps to perform entry supervisor functions, as required:
- a. Ensure entry operations and conditions are maintained in accordance with the Confined Space Entry Permit.
  - b. Take appropriate measures to remove unauthorized personnel who are in or near the space. (Entry is restricted to personnel listed in the entry log and members of rescue team.)
  - c. Ensure problems encountered during an entry operation are documented on the permit.
  - d. Ensure the Hanford Fire Department remains available for rescue operations by maintaining contact with the Department.
  - e. Ensure the name and signature of a relieving supervisor are recorded on the Confined Space Entry Permit when the duties of entry supervisor are transferred during the course of entry. (Signature indicates verification of the required conditions specified in the Confined Space Entry Permit.)
  - f. Ensure that all persons entering and exiting confined spaces are documented on the Confined Space Entry Log ([A-6003-872](#)).
  - g. If qualified, serve as attendant, when applicable and so designated in the entry log.
- Attendant
27. Establish and maintain an entry log to record confined space entries and exits, activities performed, and personnel duty hours.
28. Ensure all personnel associated with the entry are recorded on the Confined Space Entry Log ([A-6003-872](#)).
- NOTE: For non-entrants, “time in” and “time out” refer to duty time, not entry time.
29. Order entrants to evacuate the confined space immediately, if any of the following occur:
- A condition that is not allowed on the permit (e.g., interruption of ventilation).
  - Activation of an alarm on the atmospheric testing equipment.
  - Behavioral effects of hazard exposure or an uncontrolled hazard in the space.
  - A situation outside the space that could impact the safety of the entrants.

- At the request of the entry supervisor.
  - Attendant must leave the workstation and cannot be replaced by another qualified attendant.
  - Attendant cannot perform all required duties safely and effectively.
30. Summon the Hanford Fire Department under any of the following circumstances and stand by to inform the rescue team of all hazards associated with the confined space:
- Rescuers are required to enter the confined space.
  - Rescue involves retrieval of an injured person.
  - Attendant needs help performing a non-entry retrieval of the confined space occupants.
  - Medical assistance is required.

31. If an unauthorized person approaches to enter a permit space while entry is underway:

- a. Stop the person from entering the confined space.

32. Complete the following substeps to perform confined space attendant functions, as required:

NOTE: No tasks or duties are to be performed that will interfere with the primary responsibilities of monitoring (visually) and protecting the authorized entrants.

- a. Remain stationed outside the confined space during entry operations until relieved by another attendant.
- b. Ensure all duty changes are documented in the entry log.
- c. Continuously monitor activities inside and outside the confined space to determine if it is safe for entrants to remain in the space.

NOTE: Attendant monitoring is not to be confused with atmospheric testing.

- d. Communicate with entrants as necessary to monitor entrant status.

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- e. If necessary, perform non-entry rescue as specified on the permit (i.e., rescue is performed without entering confined space).
- Entrants
33. Sign the entry log for each entry/exit.
34. Complete the following substeps to perform confined space entrant functions, as required:
- a. Understand and implement required measures for work control as defined in the permit.
- b. Use all equipment and tools safely and in the manner for which they were designed.
- c. Communicate with attendant, as necessary, to facilitate the monitoring of entrant status and conditions in the confined space.
- d. Alert the attendant if any hazardous or prohibited condition is identified.
- e. Exit from the confined space as quickly as possible when ordered to evacuate or an evacuation alarm is activated.
35. Complete all entry operations.
- Entry Supervisor
36. Verify all entrants have exited the space.
37. Remove temporary barricades, if applicable.
38. Ensure any unusual conditions encountered during the entry operation are recorded on the Confined Space Entry Permit.
39. Record (on the Confined Space Entry Permit) any feedback information that may be useful to future work activities in the confined space.

#### 4.5 Canceling a Confined Space Entry Permit

See [Figure 5](#) for procedure flowchart.

- Entry Supervisor
1. Record the date/time of the last exit from the confined space on the Confined Space Entry Permit in section 1 on the line labeled "Permit Valid To."
2. Cancel the permit by completing and signing the "Permit Cancellation" in section 10.
3. Attach the entry log to the canceled permit.

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| Facility Manager,<br>Construction<br>Manager, Field Work<br>Supervisor | <ol style="list-style-type: none"> <li>4. If entry operations were canceled because of conditions not allowed by the permit, or if unusual conditions were encountered during entry, conduct a post review of the permit with assistance from Industrial Safety/Hygiene.</li> <li>5. With the support of Industrial Safety/Hygiene, review the canceled permit for completeness, and submit the canceled permit with the work package records.</li> <li>6. Send a copy of completed permit (including entry log sheets) to the Field Safety office.</li> <li>7. Perform an annual review of canceled permits and entry procedures to ensure an effective confined space program.</li> </ol> |
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#### 4.6 Atmospheric Testing for Permit-Required Confined Spaces

NOTE: Atmospheric testing is performed by Industrial Hygiene or other qualified personnel. Industrial hygiene determines the conditions under which persons other than Industrial Hygiene can perform atmospheric testing.

See [Figure 6](#) for procedure flowchart.

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| Industrial Hygiene                                   | <ol style="list-style-type: none"> <li>1. Determine atmospheric testing requirements.</li> <li>2. Document the atmospheric testing requirements on the Confined Space Entry Permit.</li> <li>3. Maintain calibration and maintenance records to ensure data collected is representative of the levels of contaminants being measured.</li> </ol> |
| Industrial Hygiene/<br>Atmospheric Testing<br>Person | <ol style="list-style-type: none"> <li>4. Record instrument calibration data and all initial and subsequent atmospheric test results on the Confined Space Entry Permit and on Direct Reading Instrument Form (DRI) (or equivalent form that documents calibration data). See Attachment C for monitoring protocols.</li> </ol>                  |

#### 4.7 Entry to Confined Space With Atmospheric Hazard Only

NOTE: These are the alternate permit confined space entry steps allowed by OSHA in 29 CFR 1910.146(c)(5)(i) and (ii). These steps are allowed when the only hazard or potential hazard in the permit confined space is the atmosphere, which is controlled by continuous forced or exhaust air ventilation. No confined space permit is required and no "permit downgrade" is required.

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| Facility Manager | <ol style="list-style-type: none"> <li>1. Establish that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.</li> <li>2. Establish that continuous forced or exhaust air ventilation alone is sufficient to maintain the confined space safe for entry.</li> </ol> |
|------------------|--|

- |                    |    |   |
|--------------------|----|---|
| Safety and Health  | 3. | Develop the monitoring and inspection data which support steps 4.7.1 and 4.7.2. These data are documented and made available to all personnel entering the confined space or to their authorized representatives.   |
| Facility Manager   | 4. | Eliminate any conditions making it unsafe to remove the cover to the confined space.  |
|                    | 5. | Guard the confined space opening with a railing or temporary cover or other temporary barrier that will prevent an accidental fall through the opening and that will protect personnel working in the space from foreign objects entering the space.  |
| Industrial Hygiene | 6. | Test the internal atmosphere with a calibrated direct reading instrument (DRI) for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any personnel entering the space, or their authorized representative shall be provided an opportunity to observe the pre-entry testing. |
| Facility Manager   | 7. | Place continuous forced or exhaust air ventilation in service to eliminate any atmospheric hazard, directing it to those areas personnel are working in, and keeping it in service until all personnel have exited the space. The air supply shall be from a clean source and may not increase the hazards in the space.            |
| Industrial Hygiene | 8. | Periodically test the space to ensure the continuous forced or exhaust air ventilation is preventing the accumulation of an atmospheric hazard. Any personnel entering the space, or their authorized representative shall be provided an opportunity to observe the periodic testing.  |
| Facility Manager   | 9. | Verify the space is safe for entry with a written certification including the date, the location of the space, and the signature of the person providing the certification. The certification shall be made prior to entry and made available to personnel entering the space or their authorized representative.                   |

#### 4.8 Downgrading a Permit-Required Confined Space

This section describes how a space classified as a permit-required confined space may be temporarily downgraded (reclassified) to a non-permit confined space when the confined space no longer poses an actual or potential hazard.

NOTE: Control of atmospheric hazards through forced exhaust air ventilation does not constitute elimination of the hazards.

See [Figure 7](#) for procedure flowchart.

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|------------------|----|--|
| Facility Manager | 1. | Obtain concurrence from line management and Industrial Hygiene/Safety for downgrading of a permit-required confined space. |
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| Safety and Health                  | 2. Complete a Confined Space Entry Permit ( <a href="#">A-6003-871</a> ) as follows. <ol style="list-style-type: none"><li>a. Describe the potential hazards of the space in section 2.</li><li>b. Describe the method(s) authorized to eliminate the hazards prior to entry in section 3.</li><li>c. Write “Permit Downgrade” in section 5 and at the top of page 1.</li><li>d. Sign and date in section 9.</li></ol> |
| Facility/Construction Manager      | 3. Sign and date downgraded Confined Space Entry Permit in section 9 to concur with downgrading of the space.  |
| Line Manager/Field Work Supervisor | 4. Ensure a person who has attended Confined Space Refresher Training (FH course 020131, or CH2M course 354020) briefs all entry team members and support personnel on the hazards associated with the entry and the details of the permit requirements per <a href="#">Attachment B</a> .<br><br>NOTE: Briefings are to be in accordance with <a href="#">TFC-OPS-MAINT-C-02</a> .                                    |
|                                    | 5. Immediately prior to planned entry into the space, document completion of the following on the downgraded Confined Space Entry Permit: <ul style="list-style-type: none"><li>• All specified pre-entry hazard elimination activities have been accomplished</li><li>• All applicable sections of the document are completed</li><li>• Required signatures have been obtained.</li></ul>                             |
|                                    | 6. Authorize entry into the downgraded confined space by signing the downgraded Confined Space Entry Permit in section 9.<br><br>NOTE: A signed off Confined Space Entry Permit is the official authorization for downgrading a permit-required confined space.  |
|                                    | 7. Enter the date/time that the confined space entry activities started on the downgraded Confined Space Entry Permit. Make the entry in section 1 on the line labeled “Permit Valid From...”  |
|                                    | 8. Post the downgraded Confined Space Entry Permit at the entrance of the confined space.  |

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| Employees                          | 9. If a hazard arises within the confined space, complete the following substeps:  |
|                                    | a. Exit the space immediately.   |
| Line Manager/Field Work Supervisor | b. Re-evaluate the space and determine if it must be reclassified as a permit-required confined space.   |
|                                    | 10. Complete the following substeps after all entry activities have been completed:  |
|                                    | a. Verify all entrants have exited the space.  |
|                                    | b. Remove any temporary barricades.  |
|                                    | c. Return the space to service, as applicable.   |
|                                    | 11. Enter the date/time of the last exit from the confined space on the downgraded Confined Space Entry Permit. Make the entry in section 1 on the line labeled "Permit Valid To." |
|                                    | 12. Cancel the downgraded Confined Space Entry Permit by completing and signing the "Permit Cancellation" in section 10.   |
|                                    | 13. Review document for completeness, deliver a copy of the downgraded Confined Space Entry Permit to the Field Safety office, and retain the original with the work package.      |

#### 4.9 Non-Permit Confined Space Entry Process

This section describes the procedure for entry into confined spaces identified as a Non-Permit Confined Space on the Confined Space Hazard Evaluation form.

See [Figure 8](#) for procedure flowchart.

- |   |   |
|---|---|
| Manager/Supervisor<br>Construction<br>Manager | 1. Verify that the configuration of the confined space is the same as stated in the Confined Space Hazard Identification Form ( <a href="#">A-6004-440</a> ) <del>6001-798</del> ). |
| Safety and Health                             | 2. Evaluate potential affect of planned work activities and changes in the space configuration.   |
|   | 3. If the affect of planned work activities and changes in the space configuration will not introduce space hazards, proceed as routine work package.                               |

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4. If the affect of planned work activities and changes in the space configuration will introduce space hazards, complete the following substeps:

a. Go to Section 4.4 for entry into a permit-required confined space.

Manager/Supervisor  
Construction  
Manager/Field Work  
Supervisor

5. Ensure that hazards associated with work activities in non-permit confined spaces are managed appropriately and in accordance with other applicable OSHA standards.

6. Brief all entry team members and support personnel on the hazards associated with the entry and the requirements per [Attachment B](#).

NOTE: Briefings are to be in accordance with [TFC-OPS-MAINT-C-02](#).

#### 4.10 Control and Review of Records

See [Figure 9](#) for procedure flowchart.

Project Safety and  
Health

1. Maintain the following records as part of the facility documentation:

- Confined Space Hazard Identification Forms and canceled Confined Space Entry Permits.

NOTE: Canceled Confined Space Entry Permits need only be maintained for twelve months. Confined space documentation can be found with the associated work package in TFCHAMPS (Tank Farms work control system).

Facility Manager/  
Line Manager/  
Construction  
Manager

2. Within 30 days of the end of the calendar year, conduct a review of canceled Confined Space Entry Permits and related documentation issued during the previous calendar year to ensure that employees who are participating in entry operations are protected from permit space hazards.

NOTE: Assistance from Safety and Health may be obtained for conducting reviews of canceled permits.

3. If the review in step 2 identifies a need for changes or improvements in the confined space procedure, document these issues on a PER in accordance with [TFC-ESHQ-Q\\_C-C-01](#) to track corrective actions.

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4. Document the review in step 2 in an internal memo format ([TFC-BSM-AD-C-03](#)), noting any actions that were identified in step 3 and associated PERs.

NOTE: If no permit-required confined space entries were performed in the previous calendar year, no review is necessary, and the memo need only state this.

- Safety and Health
5. Integrate applicable information obtained from reviews in step 2 into safety procedures and maintain copies of documents generated in step 4 for audit purposes.

## 5.0 DEFINITIONS

Attendant. An individual stationed outside one or more permit-required confined spaces who monitors the authorized entrants and performs other attendant functions.

Entrant (authorized). An employee authorized to enter permit-required confined space.

Entry (into a confined space). When any part of a person's body breaks the plane of the permit-required confined space.

Confined space. A physical space that has limited or restricted means for entry or exit, but is large enough and so configured that a person can enter and perform assigned work. A confined space is not designed and is unsuitable by nature for continuous employee occupancy, because those spaces were created to contain such things as degreasers, sawdust, and sewage, not to accommodate people.

NOTE: A space that is locked with a cover or panel, or requires special tools or equipment for entry, does not meet the criteria for a confined space until it becomes accessible.

Hazardous atmosphere. An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from any of the following causes:

- Flammable gas, vapor, mist or airborne combustible dust in excess of 10 percent of its lower flammable limit.
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
- Atmospheric concentration of any substance that is capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects.

NOTE: For example, concentrations less than IDLH levels of tank vapors, welding fumes, etc., would not require classification of a space as a permit-required confined space.

- Any other atmospheric condition that is immediately dangerous to life or health

NOTE: Posting a space as a radiological work area does not meet the 29 CFR 1910.146(b) definition of a hazardous atmosphere, thus would not in and of itself require classification of a space as a permit-required confined space.

Non-permit confined space. A confined space that does not contain, or have the potential to contain, atmospheric hazards capable of causing death or serious physical harm.

Permit-required confined space. A confined space that has one or more of the following characteristics:

- Contains, or has a potential to contain, a hazardous atmosphere
- Contains a material that has the potential for engulfing an entrant
- Contains an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls
- Contains a floor which slopes downward and tapers to a smaller cross-section
- Contains any other recognized serious safety or health hazard.

## 6.0 RECORDS

The following records are generated during the performance of this procedure:

<u>Record Description</u>	<u>Vital Record</u> <u>Y/N</u>	<u>QA Record</u> <u>Y/N</u>	<u>QA Record Retention</u> <u>L/NP</u>	<u>NARA Retention Schedule</u>	<u>Other Retention Requirements</u>	<u>Records Custodian</u>
<u>Confined Space Hazard Identification Form (A-6004-440)(6001-798)</u>	<u>N</u>	<u>Y</u>	<u>L</u>	<u>ADM-17.32a</u>	<u>3.1.6.m</u>	<u>Project Safety and Health</u>
<u>Confined Space Entry Permit (A-6003-871)</u>	<u>N</u>	<u>Y</u>	<u>NP</u>	<u>ADM-17.32b1</u>	<u>N/A</u>	<u>Project Safety and Health</u>
<u>Confined Space Entry Log (A-6003-872)</u>	<u>N</u>	<u>Y</u>	<u>NP</u>	<u>ADM-17.32b1</u>	<u>N/A</u>	<u>Operations as part of Work Package</u>
<u>Confined Space Entry Notification – Hanford Fire Department (A-6001-250)</u>	<u>N</u>	<u>Y</u>	<u>NP</u>	<u>ADM-17.32b1</u>	<u>N/A</u>	<u>Operations as part of Work Package</u>
<u>Memos documenting annual reviews of Confined Space Permits</u>	<u>N</u>	<u>Y</u>	<u>L</u>	<u>ADM-17.32a</u>	<u>3.1.6.k</u>	<u>Safety and Health</u>

The identified record custodian is responsible for record retention in accordance with TFC-BSM-IRM\_DC-C-02.

- Confined Space Hazard Identification Form (A-6001-798)
- Confined Space Entry Permit (A-6003-871)
- Confined Space Entry Log (A-6003-872)
- Confined Space Entry Notification – Hanford Fire Department (A-6001-250)
- Memos documenting annual reviews of Confined Space Permits.

~~The TFC Training organization is responsible for training record retention and retirement in accordance with [TFC-BSM-IRM-DC-C-02](#).~~

~~The TFC Operations organization is responsible for Confined Space Hazard Identification forms and Confined Space Entry Permits for record retention and retirement in accordance with [TFC-BSM-IRM-DC-C-02](#).~~

## 7.0 SOURCES

### 7.1 Requirements

1. [10 CFR 851, "Worker Safety and Health Program."](#)
2. 29 CFR 1910.146, OSHA, "Permit-Required Confined Spaces." (S/RID)
3. 29 CFR 1910.146(g)(1, 2 and 4) OSHA. (S/RID)

### 7.2 References

~~1.10 CFR 851, "Worker Safety and Health Program," Subpart C, "Specific Program Requirements."~~

~~2.10 CFR 851.23, "Safety and Health Standards."~~

1. TFC-BSM-IRM\_DC-C-02, "Records Management."
2. TFC-ESHQ-Q\_C-C-01, "Problem Evaluation Request."
3. TFC-ESHQ-IH-STD-03, "Exposure Monitoring, Reporting, and Records Management."
4. TFC-ESHQ-S\_IS-C-02, "Personal Protective Equipment."
5. TFC-ESHQ-S\_SAF-C-02, "Job Hazard Analysis."
6. TFC-ESHQ-S-STD-26, "Fall Protection."
7. TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control."
8. TFC-OPS-MAINT-C-02, "Pre-Job Briefing."

Figure 1. Initial Assessment and Identification of Confined Spaces Flowchart.

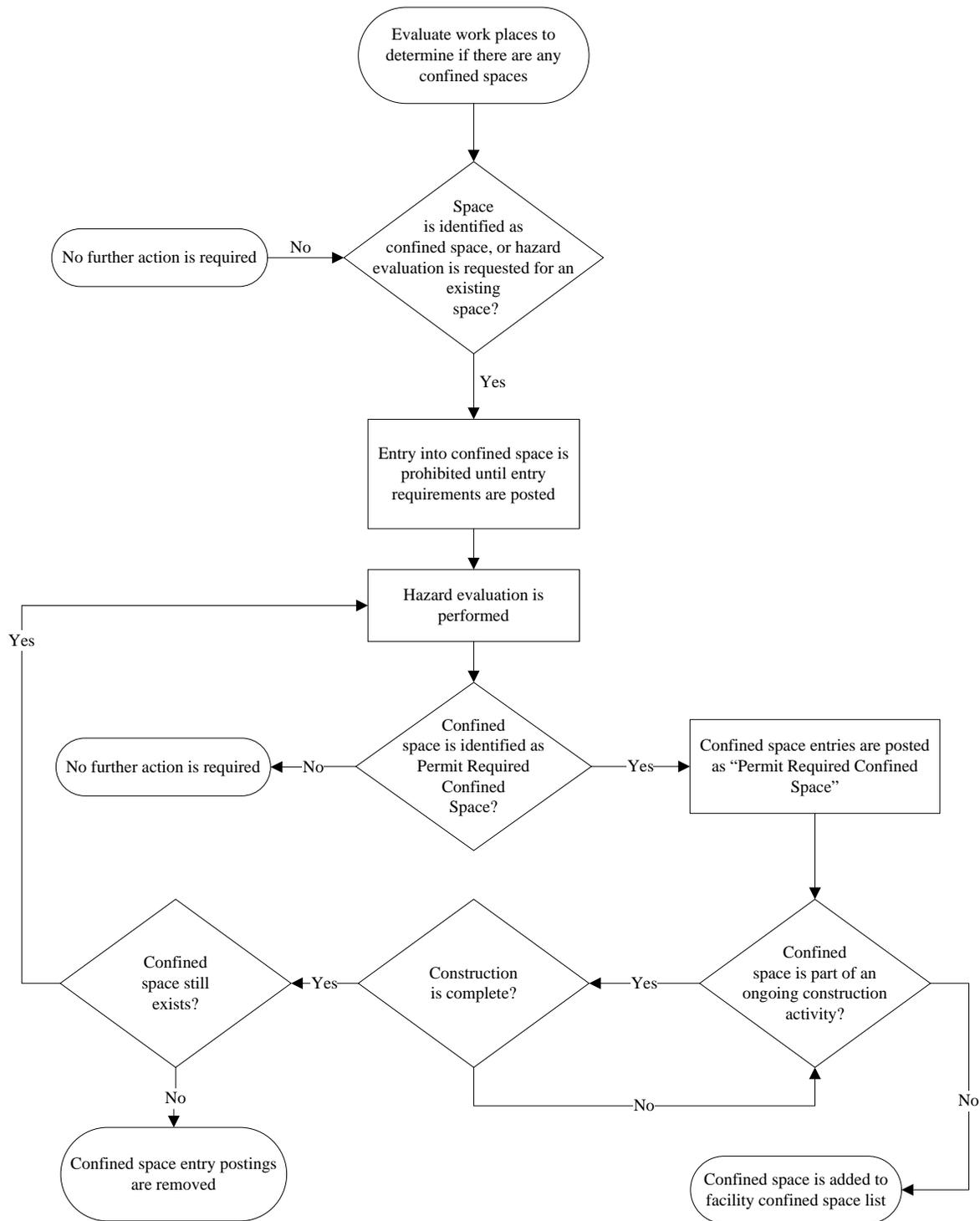


Figure 2. Training Qualifications Flowchart.

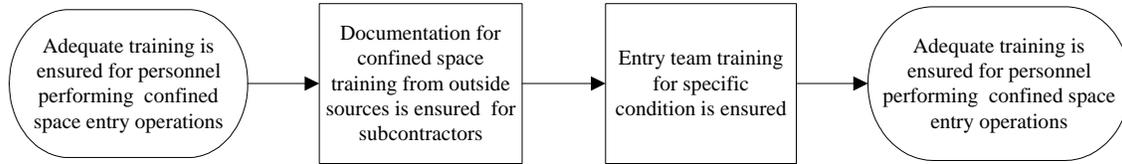


Figure 3. Emergency Response and Rescue for Permit Required Confined Space Flowchart.

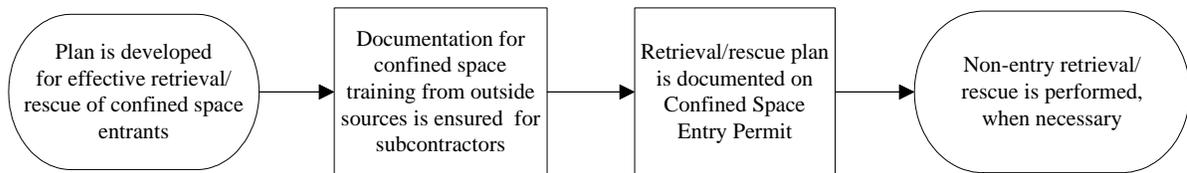


Figure 4. Permit Required Confined Space Entry Flowchart.

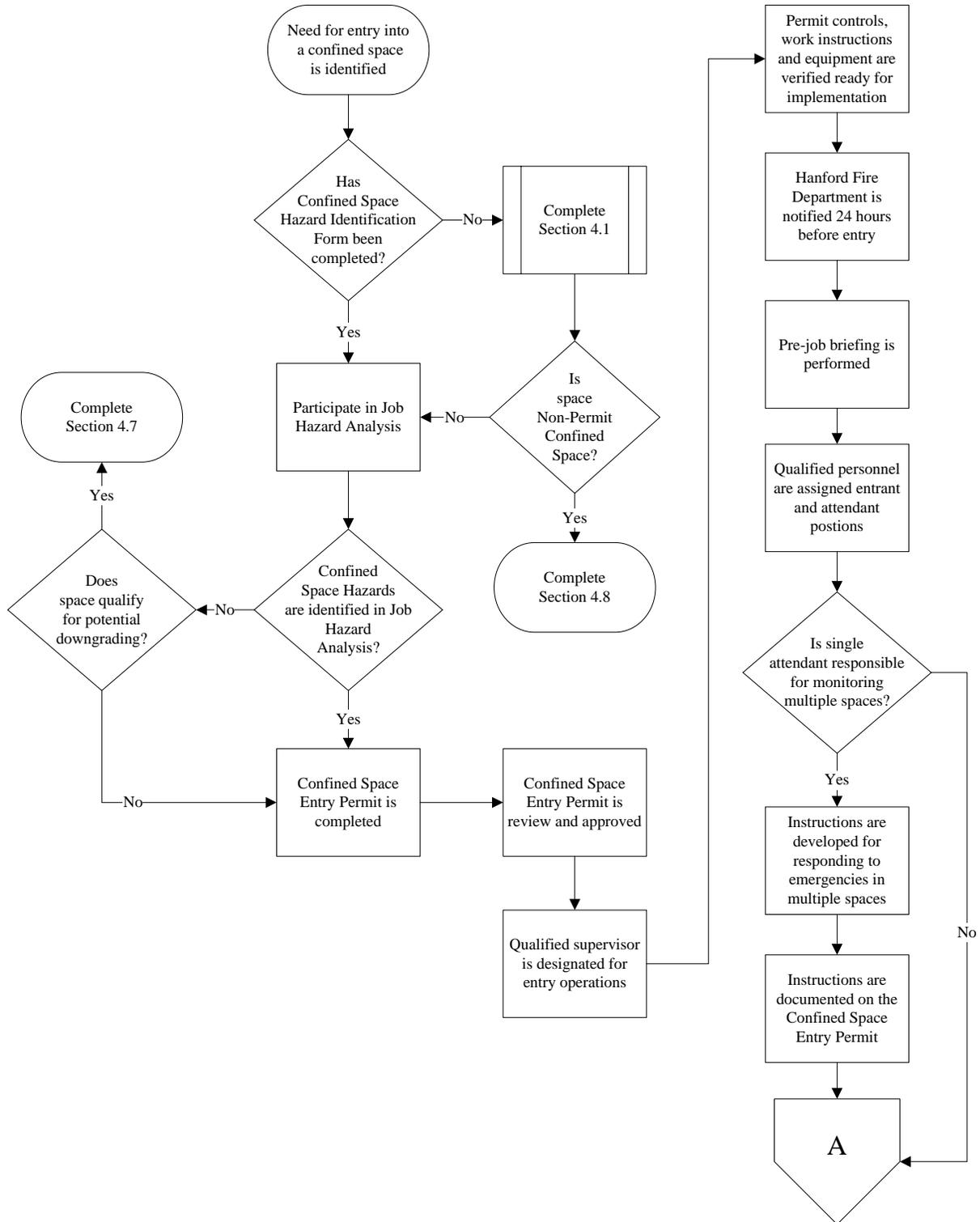


Figure 4. Permit Required Confined Space Entry Flowchart. (cont.)

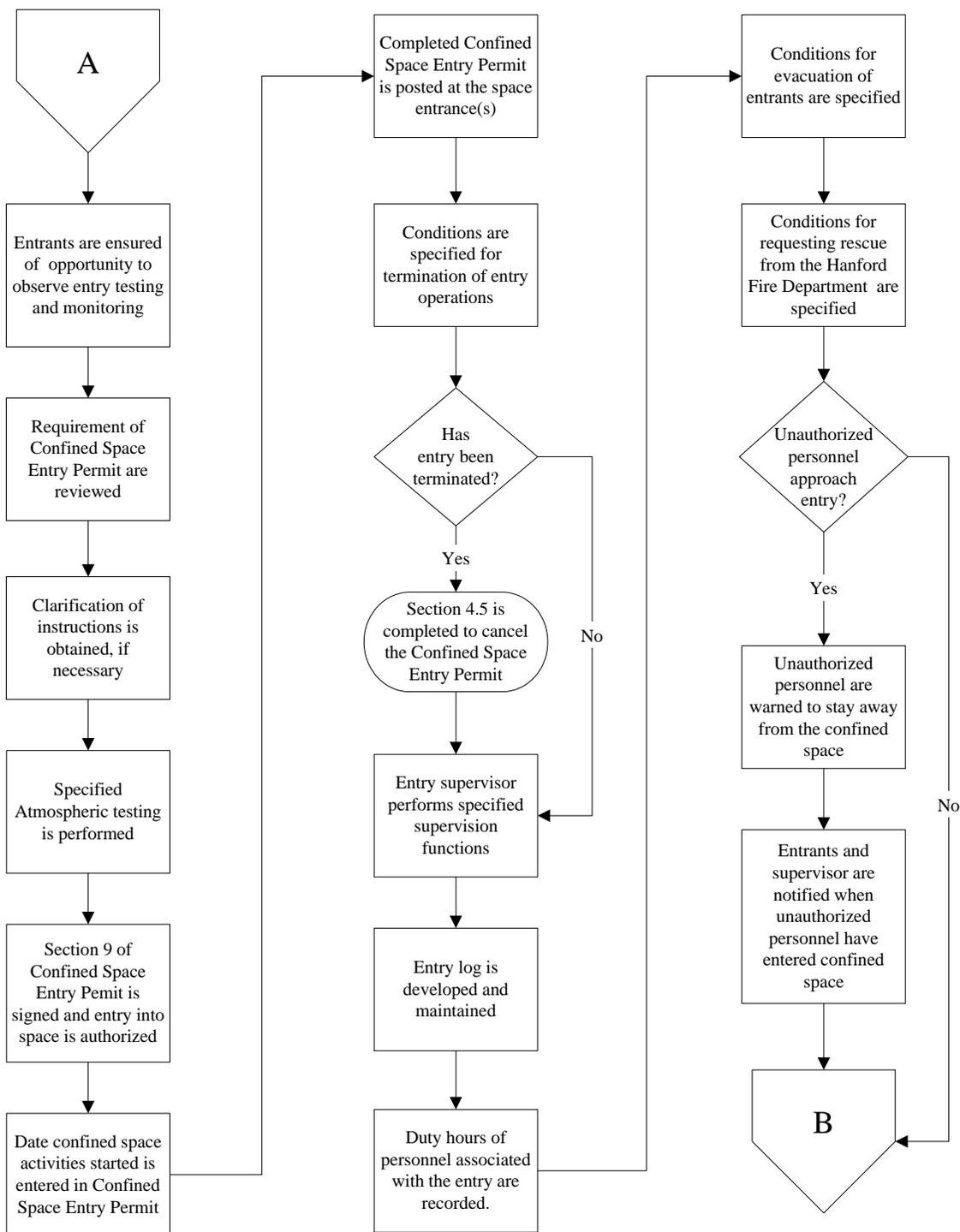
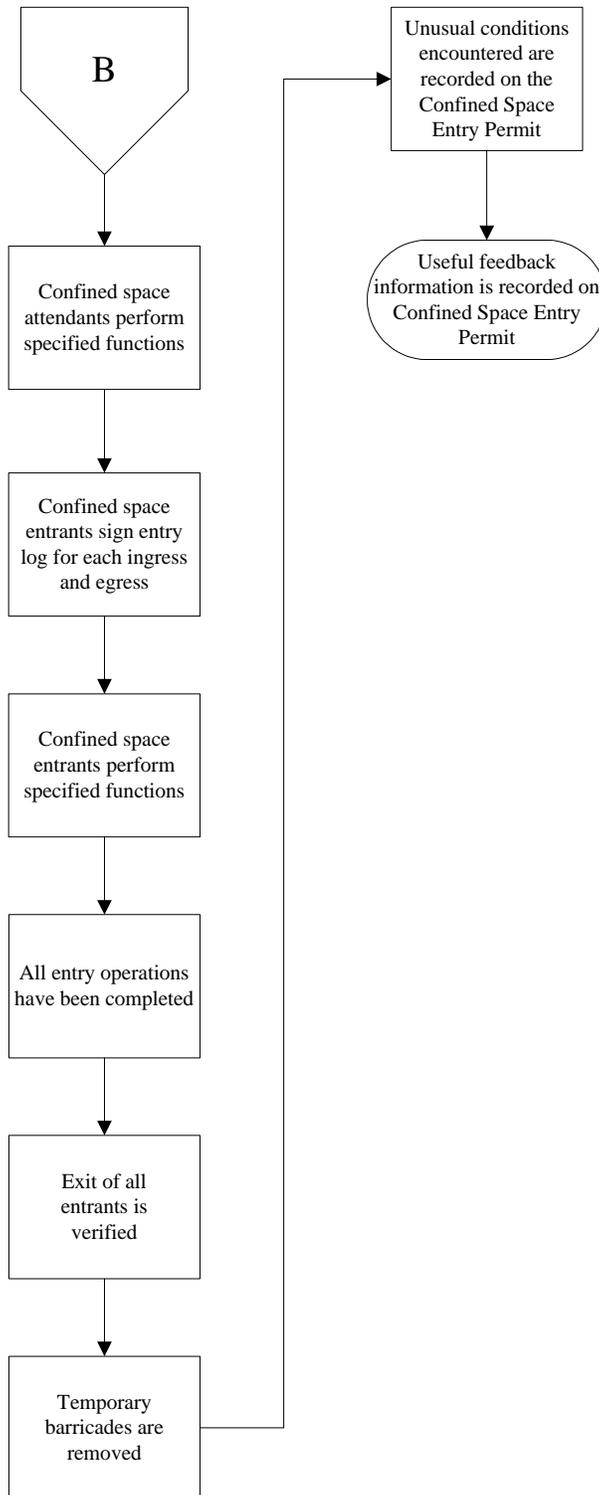
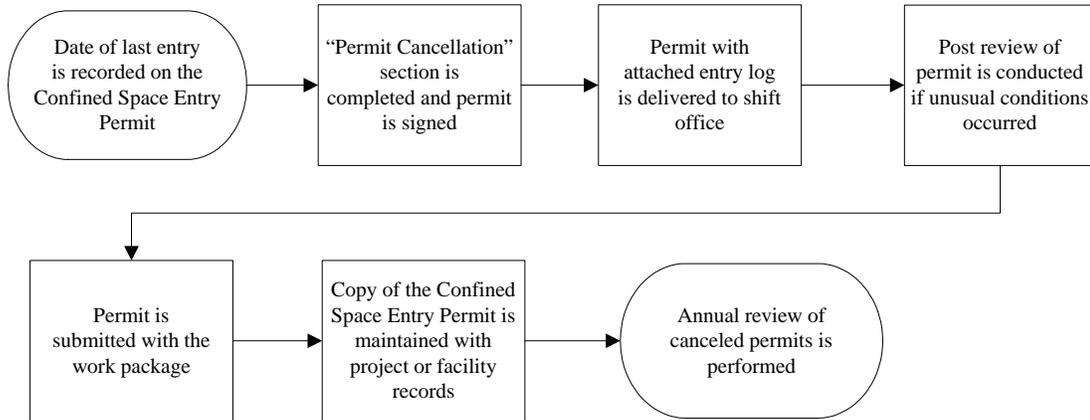


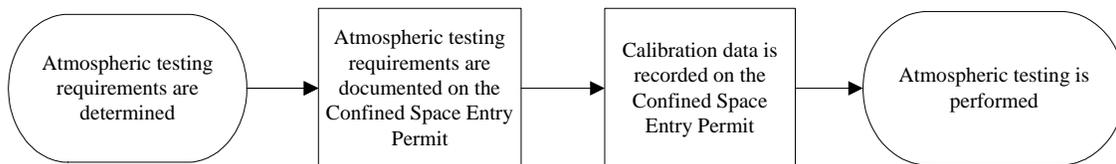
Figure 4. Permit Required Confined Space Entry Flowchart. (cont.)



**Figure 5. Canceling a Confined Space Entry Permit Flowchart.**



**Figure 6. Atmospheric Testing for Permit Required Confined Spaces Flowchart.**



**Figure 7. Downgrading a Permit Required Confined Space Flowchart.**

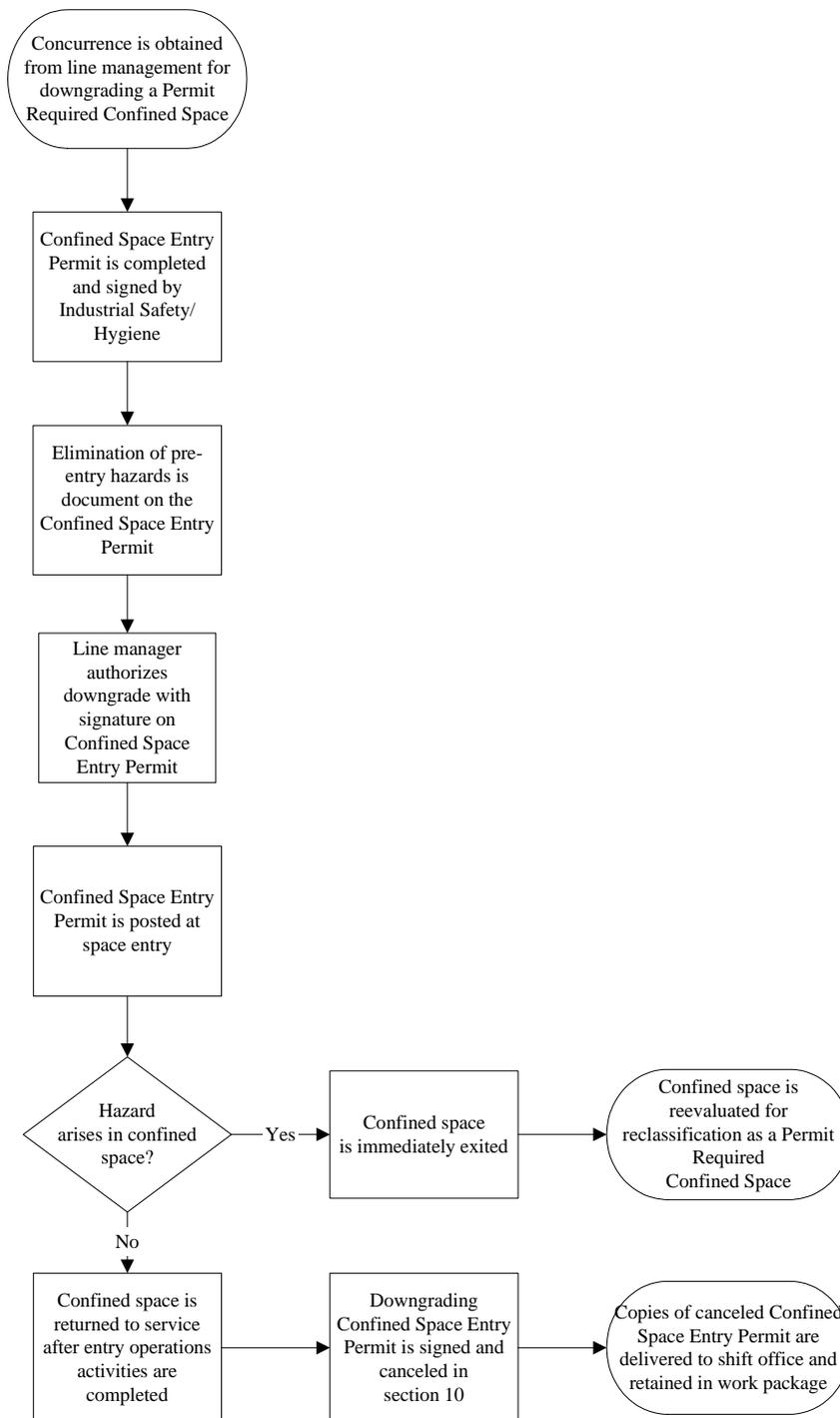


Figure 8. Non-Permit Confined Space Entry Process Flowchart.

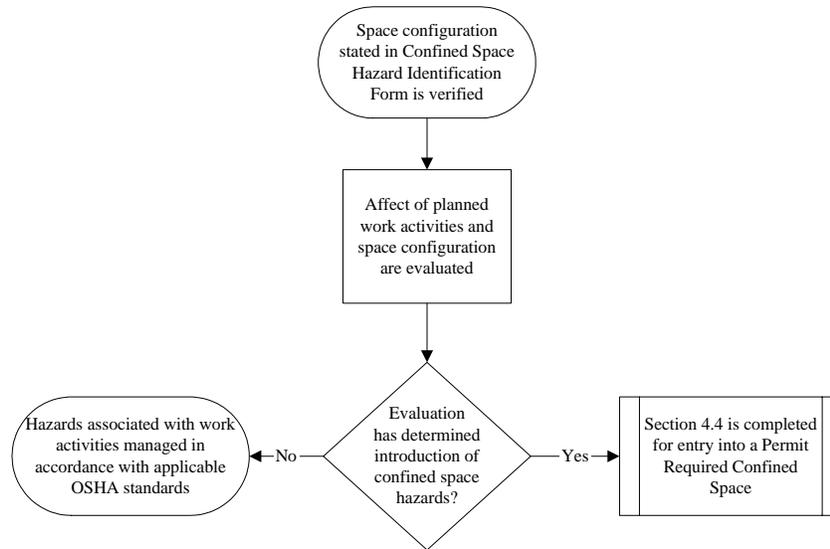
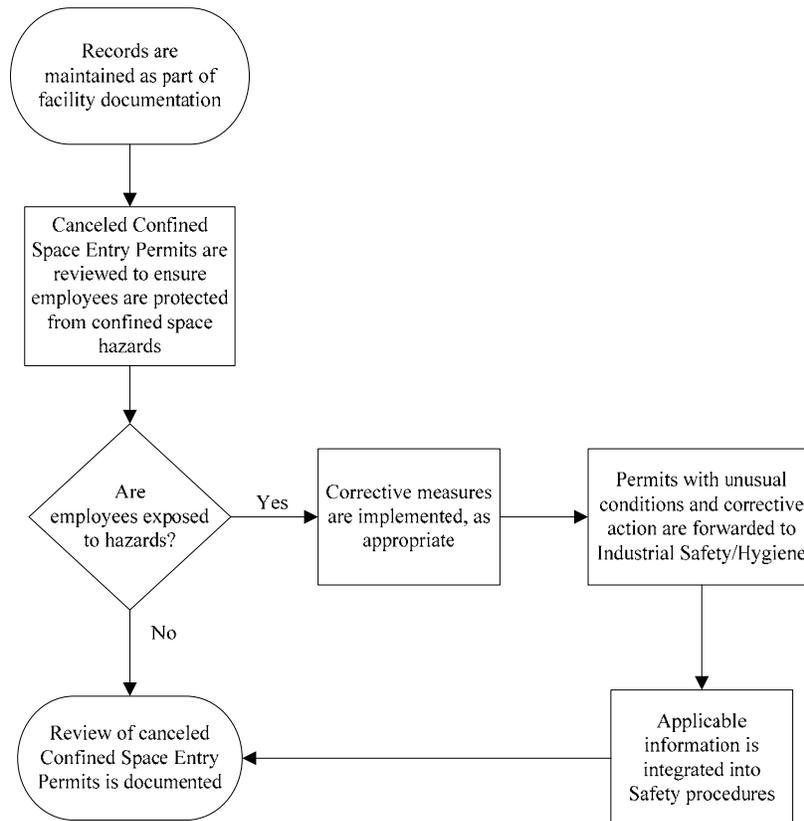


Figure 9. Control and Review of Records Flowchart.



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## ATTACHMENT A – HAZARD CONTROLS/WORK PRACTICES

### 1.0 Elimination or Control of Confined Space Hazards

For permit-required confined space entries, controls should be assigned commensurate with the risk and dependent on the hazard(s) and whether the hazard will be eliminated prior to entry or controlled prior to and during entry. When feasible, hazard control/reduction is implemented by:

- Redesigning tasks so that personnel entry into confined spaces is unnecessary
- Using accepted engineering control measures
- Applying administrative controls and work practices
- Prescribing personal protective equipment.

Ensure that recommendations for controls or work practices are prescribed with consideration of any additional hazards that the control itself may introduce.

Ensure that prescribed protective measures do not interfere with the ventilation requirements for the space, means of ingress or egress, or rescue methods.

### 2.0 Electrical Vault Entry

Electrical current carrying conductors of over 300 volts in electrical vaults which are of the manhole type must be deenergized and locked and tagged out prior to entry. (This does not apply to large spaces like cable spreader rooms, which present no electrical hazards.)

Vaults smaller than six feet by six feet cannot be entered without deenergizing the conductors.

Vaults larger than six feet by six feet may be entered without deenergizing if:

- There is written justification for why the conductors cannot be deenergized
- A work plan, including a job hazard analysis, has been prepared
- An industrial safety/industrial hygienist and a qualified electrical technician have reviewed and approved the work plan and justification.

NOTE: Confined spaces containing energized but adequately protected conductors do not necessarily constitute a permit-required confined space.

### 3.0 Isolation/Tagout Requirements

Evaluate energy sources/materials, including equipment not connected to an energy source but having unguarded movable parts. Consider outside sources that could introduce a hazardous substance into the space. If sources are determined to be potentially hazardous to the entrants, then isolate in accordance with [TFC-OPS-OPER-C-05](#), "Lockout/Tagout Program." Examples of hazardous energy include electrical, mechanical, hydraulic, pneumatic, chemical and thermal energies, in addition to potential energies such as compressed gases, springs, or suspended objects.

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## **ATTACHMENT A – HAZARD CONTROLS/WORK PRACTICES (cont.)**

Acceptable means of isolation include blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout/tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

### **4.0 Purging/Flushing/Ventilation Requirements**

Prior to entry, ensure confined spaces are emptied or otherwise purged of flammable, injurious, or incapacitating substances, as feasible.

If safe levels cannot be achieved, additional ventilation or other engineering controls will be implemented to reduce contaminants to the lowest level feasible, and adequate personal protective equipment will be provided.

Pure oxygen shall not be introduced into the space for purposes of ventilation or to improve the breathing air quality.

If flammable gases, vapors, or combustible dusts are present, the ventilating equipment must be approved for use in the specific hazardous location (see NFPA).

Test the atmosphere prior to and during ventilation of the space to ensure acceptable entry conditions. If the ventilation system shuts down, entrants shall leave the space and not re-enter until approved by Industrial Health/Industrial Safety.

Continuous ventilation or local exhaust ventilation of the confined space shall be provided and maintained during welding, painting, and other operations that generate air contaminants. If ventilation is not possible or feasible, alternative protective measures shall be developed by line management and Industrial Health/Industrial Safety.

The ventilation arrangement for the space must preclude the entry of atmospheric contaminants into the ventilation intake and the exhaust of contaminants into adjacent work areas.

### **5.0 Welding, Cutting, and Heating**

Welding and cutting performed in a confined space requires a separate Hotwork Permit ([A-6003-692](#)). Ensure that fire hazards and flammable atmospheres have been controlled in accordance with [TFC-ESHQ-FP-C-01](#).

### **6.0 Fall Protection and Retrieval**

Provisions for fall protection and retrieval shall be based on the hazard analysis and requirements of [TFC-ESHQ-S-STD-26](#). Components making up both systems consist of personal protective gear (harness), connecting devices (retracting lifelines, retrieval devices), and approved anchorages (tri-pod).

Emergency retrieval equipment is specifically intended to lift injured personnel from a vertical confined space.

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## **ATTACHMENT A – HAZARD CONTROLS/WORK PRACTICES (cont.)**

Material hoists must be separate and approved for use as part of the anchorage system.

Fall protection (for falls over six feet) must comply with [TFC-ESHQ-S-STD-26](#).

Devices, such as a combination retractable lifeline/retrieval device, can meet both fall protection and emergency rescue functions.

### **7.0 Excavations and Trenches**

Confined space entry procedures may be applicable for certain excavations and trenches. Each situation must be evaluated separately to determine whether the requirements for confined space entry apply to the anticipated work. The construction manager, with assistance from industrial health/industrial safety, makes this determination. Conduct excavations and trenching in accordance with [TFC-ESHQ-S-IS-C-03](#).

### **8.0 Personal Protective Equipment (PPE)**

Personal protective equipment selection, as determined by industrial health/industrial safety, must be appropriate for the conditions and configuration of the confined space based upon results of the hazard evaluation, and in accordance with [TFC-ESHQ-S-IS-C-02](#), “Personal Protective Equipment.”

Confined space entrants whose work requires respiratory protection shall be fit tested, trained, and medically cleared in accordance with [TFC-ESHQ-S-IH-C-05](#).

### **9.0 Requirements for Equipment and Tools**

Requirements for hand and portable, power actuated tools or equipment are specified in [TFC-ESHQ-S-STD-13](#).

In confined spaces, ground fault circuit interrupters shall be used with all power tools that are not double insulated and whenever using extension cords and electrical lighting.

If flammable liquids, gases, or vapors are present, use only tools, lighting, communications equipment, and other electrical equipment that are approved for use in the specific hazardous location.

Ladders, scaffolding, and staging will be designed, placed, and used in accordance with [TFC-ESHQ-S-STD-01](#) and [TFC-ESHQ-S-IS-C-01](#).

### **10.0 Illumination Requirements**

All lighting used in spaces containing or having the potential to contain flammable vapors or explosive dusts shall be approved for use in hazardous atmospheres. This requirement also applies to low voltage lighting such as droplights.

**ATTACHMENT A – HAZARD CONTROLS/WORK PRACTICES (cont.)**

Install temporary lighting per National Electric Code (NEC) requirements.

Lighting shall be sufficient to ensure that entrants are able to see clearly, avoid potential hazards, and exit the space quickly in an emergency.

**11.0 External Hazards**

When entrance barriers are removed from “below grade” confined spaces, guard the opening with a railing, temporary cover, or barrier to prevent persons or objects from falling into the space.

**ATTACHMENT B – PRE-JOB REVIEW FOR CONFINED SPACE ENTRY WORK**

To address the potential for misunderstandings with work activities involving entry into confined spaces (only some of which will have special hazards), effective pre-job briefings are essential. In accordance with [TFC-OPS-MAINT-C-02](#), the following specific information must be covered by a knowledgeable individual (someone who has attended Confined Space Refresher Training, FH course 020131, or CH2M course 354020).

1. For entry into a **Non-Permit Space**, the following topics shall be presented:
  - Rational for space classification
  - Job hazards specific to work in this space and how hazards are to be controlled (e.g., reference Job Safety Analysis for work).
2. For entry into a **Downgraded Permit Space**, the following topics shall be presented:
  - Hazards originally causing the permit space classification
  - Process by which this hazard will be eliminated to allow downgrading
  - How downgrade will be implemented in this job so that workers can be assured that controls are in place prior to entry
  - Job hazards specific to work in this space and how hazards are to be controlled (e.g., reference Job Safety Analysis for work)
3. For entry into a **Permit Space**, the following topics shall be presented:
  - Hazards causing classification as permit space
  - Discussion of this hazard(s), including signs/symptoms of exposure
  - Requirements of confined space permit
  - In the context of this job, specific duties/responsibilities of permit space personnel will be thoroughly reviewed, including:
    - Permit Space Supervisor
    - Attendant(s)
    - Atmospheric Testing Person
    - Entrant(s).
  - Provisions for retrieval and rescue (who is designated, how notified, etc.)
  - Job hazards specific to work in this space and how hazards are to be controlled (e.g. reference Job Safety Analysis for work).

**ATTACHMENT C – ATMOSPHERIC TESTING FOR PERMIT-REQUIRED CONFINED SPACES**

1. Perform atmospheric testing by completing the following substeps.
  - a. Notify entry supervisor or attendant immediately if testing indicates the presence of a hazardous atmosphere in the confined space.
  - b. Perform testing as prescribed by the Confined Space Entry Permit.
2. Sequence of testing.
  - a. If a multi-gas sensing meter is not being used, test for oxygen first, for combustible gasses/vapors second, and for toxic gases/vapors last (as prescribed by the permit).

NOTE: Even when oxygen deficiency is not an identified hazard, oxygen concentration must be monitored because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere.
3. Use of mechanical ventilation.
  - a. When portable mechanical ventilation is used, perform atmospheric testing first with the ventilation off, and subsequently with the ventilation on.
4. Stratified atmospheres.
  - a. When testing for entries involving a descent into atmospheres that may be stratified, test the atmospheric envelope at a distance of approximately 4 feet in the direction of travel and to each side.

NOTE: Stratified atmospheres are a characteristic of highly stagnant air as found in large tanks with very small access points. Spaces with large access areas exposed to atmospheric wind conditions are highly unlikely to maintain stratified conditions.
5. Large spaces or areas that cannot be isolated.

If the space configuration limits effective atmospheric testing, as may occur with large spaces or spaces that cannot be isolated such as sewer system entries, complete the following substeps:

- a. Perform pre-entry testing to the extent feasible before entry is authorized.
- b. If entry is authorized, continuously test conditions in the areas where entrants are working.

NOTE: Providing entrants with personal monitoring devices they are trained to use is one method of providing this continuous monitoring.