

Confined Space: Entry Procedures

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Department: Field Safety and Building Inspection Office

Program: Confined Space

Authority: [ESH Manual, Chapter 6, Confined Space](#)

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1 Purpose

The purpose of this procedure is to ensure that entry into any confined space is planned and documented as required in order to identify and control hazards.

2 Scope

This procedure covers the entry method selection, planning, and documentation of entry into confined spaces of both classifications: non-permit required confined space (NPRCS) and permit-required confined space (PRCS).

3 Applicability

These procedures apply to all confined space entries and to anyone entering a confined space at SLAC.

4 Prerequisites

The two-person rule applies to all confined space entries; that is, every confined space entry requires the presence of at least two qualified persons. Entrants and attendants must complete the following courses before conducting any work in a confined space:

- ESH Course 144, Permit Required Confined Space ([ESH Course 144](#))
- ESH Course 144PRA, Permit Required Confined Space ([ESH Course 144PRA](#))

The confined space entry supervisor must complete ESH Courses 144 and 144PRA, listed above, and also

- ESH Course 146, Confined Space Entry Supervisor ([ESH Course 146](#))

Subcontractor employees involved in confined space entries must be trained in accordance with their company's Cal/OSHA compliant confined space entry program.

5 Procedures

Requirements for entering a confined space depend on the hazards present as determined by information in the confined space inventory and by observation.

The first step is to determine the applicable entry method as described in Section 5.1. All entries must be reviewed and confirmed as described below and in the required form or permit.

Anyone may terminate an entry and initiate a new evaluation for potential hazards if work operations or conditions change that increase a hazard or if new hazards are identified.

Note A signed and approved [hot work permit](#) is required for any spark or flame-producing activities to be done in the space. Proper lock out/tag out procedures must be in place where applicable, and must be performed by authorized persons properly trained as described in [Chapter 51, "Control of Hazardous Energy"](#).

5.1 Determining the Applicable Entry Method

5.1.1 Overview

Currently identified confined spaces are characterized in the [confined space inventory](#).

Note The following locations are generally not considered confined spaces because they are designed and equipped for continuous human occupancy. (They may, however, contain confined spaces.)

- Collider Injector Development (CID)
- Damping ring vaults
- Linac
- Positron vault
- Beam Switchyard (BSY)
- Inactive sites such as SLAC Linear Collider (SLC) arcs and Positron-Electron Project (PEP-II) ring
- Collider Experiment Hall (CEH) pit
- End Station A (ESA)
- Stanford Positron-Electron Asymmetric Ring (SPEAR) Ring and Injector/ Booster

5.1.2 Confined Space Entry Method Selection Procedure

Step	Person	Action
1.	Confined space entry supervisor / entrant / attendant or, for work involving subcontractors: university technical representative (UTR)	<p>If the confined space is identified with a posting: uses identifying information to check the confined space inventory for profile information.</p> <p>If the space is listed in the inventory but not posted: contacts the listed confined space owner to request that a posting with identifying information is put in place.</p> <p>If the work space is not posted and not listed: determines if this is a new confined space – it is large enough to enter and perform work, have limited means of access/egress, and is not designed for continuous human occupancy? If all three attributes apply, a profile must be created: contact the confined space program manager.</p>
2.	Confined space entry supervisor	<p>Determines or confirms applicable entry method (For an overview, see Confined Space: Entry Method Selection Flow Chart)</p> <ul style="list-style-type: none"> ▪ If the listed classification is NPRCS and no new hazards are identified in the space or from the work to be performed: the procedure in Section 5.2 applies. If new hazards associated with the space are identified, contact the confined space program manager to reclassify the space. ▪ If the listed classification is PRCS and if the hazards are atmospheric only and it can be controlled by forced air ventilation: the procedure in Section 5.4 applies ▪ If the listed classification is PRCS and hazards other than atmospheric are present, determines if a temporary declassification applies.¹ If so, the procedure in Section 5.4 applies ▪ If none of the above apply, use the procedure in Section 5.4
3.	Confined space program manager	Updates confined space inventory when new confined spaces or hazards are reported
4.	Confined space owner	Ensures that identifying information is available at the confined space location as described in Confined Space: Posting Requirements

1 29 CFR 1910.146, paragraph (c)(7), states that if all hazards associated with a permit-required confined space can be eliminated prior to entry, then the space can be reclassified as a non-permit required confined space (NPRCS) for the time necessary to accomplish the work and the hazards remain eliminated.

5.2 Entry Procedure for Non-permit Required Confined Space (NPRCS)

Step	Person	Action
1.	Entrant / attendant	Completes Confined Space: Non-permit Required Confined Space Entry Form (or equivalent subcontractor's SLAC-approved form) to establish that the confined space still qualifies as non-permit required and that no hazardous work ¹ will be performed.
2.	Confined space entry supervisor / confined space program manager	Before any confined space work is begun, confirms NPRCS entry conditions by signing the form or determines that another entry method applies
3.	Entrant / attendant	Takes precautions, as necessary <ul style="list-style-type: none"> ▪ Installs vehicular and pedestrian traffic controls as needed ▪ Posts warning signs and any required permit at the work location ▪ Takes measures to prevent hazards near the confined space ▪ Dons any required personal protective equipment
4.	Entrant / attendant	Performs authorized work <ul style="list-style-type: none"> ▪ It is recommended that one person remain outside the confined space ▪ If a hazardous condition is encountered, evacuates immediately and reports to supervisor
5.	Entrant / attendant	Sends entry form to the confined space program manager (Mailstop 84) once work is completed
6.	Confined space program manager	Reviews form, updates confined space inventory as necessary, and keeps form on file for a minimum of one year

- 1 Hazardous work includes painting, cleaning with acids or solvents, welding, brazing, torch cutting, sanding with power tools, sandblasting, breaking utility lines, using cryogenic gases, conducting work that involves reduction-oxidation reactions, or operating valves capable of releasing material, such as water or gas, in a quantity sufficient to engulf a person or cause a hazardous atmosphere.

5.3 Entry Procedure for Alternate Entry and Temporarily Declassified Confined Spaces

Step	Person	Action
1.	Confined space entry supervisor	<p>Confirms that entry conditions qualify for the selected entry method (as determined in Section 5.1) by signing the applicable form (or equivalent subcontractor's SLAC-approved form):</p> <ul style="list-style-type: none"> ▪ Confined Space: Alternate Entry Form ▪ Confined Space: Temporary Declassification Form
2.	Confined space entry supervisor	Ensures that hazards and controls are understood by the entrant(s) and attendant(s)
3.	Entrant / attendant	<p>Secures the work site</p> <ul style="list-style-type: none"> ▪ Installs barriers and/or controls vehicular and pedestrian traffic as needed ▪ Posts warning signs and any required permits at the work location ▪ Takes measures to prevent hazards near the confined space
4.	Entrant / attendant	<p>Ensures hazard is controlled before entry</p> <ul style="list-style-type: none"> ▪ For alternate entry, ensures atmospheric testing is conducted as necessary to determine that entry conditions remain acceptable, and ensures forced air ventilation is in place if required (see completed form) ▪ For temporary declassification, ensures hazards are eliminated as specified on completed form¹
5.	Entrant / attendant	<p>Performs work as long as hazards are controlled as specified on the form</p> <ul style="list-style-type: none"> ▪ Any change that introduces hazards requires that the space be vacated ▪ New hazards must be re-assessed and a new entry method may apply; no entry is allowed until all hazards are eliminated
6.	Entrant / attendant	Sends completed form to the confined space program manager (Mailstop 84) once the work is finished
7.	Confined space program manager	Reviews form, updates confined space inventory as necessary, and keeps form on file for a minimum of one year

▪ 1 Specified hazard elimination activities may include but are not limited to

- Flushing chemicals
- Verifying a safe pH
- Isolating incoming fluid or gas lines
- Removing or locking out any exposed mechanical and electrical energies

5.4 Entry Procedure for Permit-Required Confined Space (PRCS)

Step	Person	Action
Planning		
1.	Confined space entry supervisor	Determines if non-entry rescue can be performed. If it cannot, entry is prohibited; contacts the confined space program manager
2.	Confined space entry supervisor	Determines control measures for hazards associated with the confined space entry
3.	Confined space entry supervisor	Verifies that all required equipment, attendants, and entrants are available
Pre-entry		
4.	Confined space entry supervisor	Documents the pre-entry process with the Confined Space: Entry Permit (or equivalent subcontractor's SLAC-approved permit)
5.	Confined space entry supervisor	<p>Ensures that the confined space's atmosphere is ventilated as necessary and tested prior to entry using properly calibrated monitoring equipment. (For assistance with obtaining monitoring equipment, contact the confined space program manager or ESH coordinator.)</p> <p>Results for the following must be recorded on the permit</p> <ul style="list-style-type: none"> ▪ Oxygen ▪ Flammability (percent of lower explosive limit) ▪ Hydrogen sulfide ▪ Carbon monoxide ▪ Any other suspected or known atmospheric hazard <p>If at any time the oxygen concentration falls below 19.5 percent, the cause of the deficiency must be determined and controls must be in place before entry is allowed. If entry is necessary to correct the deficiency, self-contained breathing apparatus must be worn.</p> <p>Note: The entrant has the right to witness atmospheric testing.</p>
6.	Confined space entry supervisor	<p>Secures the work site as appropriate</p> <ul style="list-style-type: none"> ▪ Installs barriers and/or controls vehicular and pedestrian traffic as needed ▪ Posts warning signs and any required permit(s) at the work location ▪ Takes measures to prevent hazards near the confined space
7.	Confined space entry supervisor	<p>Conducts pre-entry briefing for all personnel involved in the entry that includes at minimum these topics</p> <ul style="list-style-type: none"> ▪ Work to be performed ▪ Anticipated hazards, including signs, symptoms and consequences of exposure ▪ Hazard control measures ▪ <i>Prohibited conditions</i> (specified in the permit) ▪ Non-entry rescue procedures; generally these involve using a full-body harness with a retrieval line attached to a mechanical device or fixed point. (Wristlets may be used to aid in a difficult extraction; however, wristlets should not be used to support the person's weight.)

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Step	Person	Action
8.	Confined space entry supervisor	Verifies that <ul style="list-style-type: none"> ▪ All control measures, procedures, and equipment specified by the permit are in place ▪ Entry conditions are acceptable
9.	Confined space entry supervisor	Signs the pre-entry certification section of the permit
Confined space entry		
10.	Entrant	Enters the permit-required confined space only if <ul style="list-style-type: none"> ▪ Listed on the permit ▪ Entry conditions are acceptable ▪ All control measures and specified non-entry rescue provisions are implemented
11.	Confined space entry supervisor	Verifies that acceptable entry conditions are maintained and that entry operations remain consistent with terms of the permit and the hazards associated with the planned work
12.	Attendant	<ul style="list-style-type: none"> ▪ Maintains communication with the entrant(s) and performs no other duties that might interfere with his or her ability to observe and protect the entrant(s) ▪ Controls entry by remaining at the work site and keeping an accurate accounting of entrants on the permit ▪ Does not become an entrant unless he/she is both listed as an entrant and has been replaced by a qualified attendant.
13.	Entrant	Maintains communication with the attendant. Maintains readiness to exit if ordered by attendant.
14.	Attendant	Orders entrant(s) to evacuate the space if one or more of the following occurs: <ul style="list-style-type: none"> ▪ Detects a <i>prohibited condition</i> ▪ Observes any behavioral effects of exposure to any hazard ▪ Identifies a nearby situation that may endanger the entrant(s) ▪ Becomes unable to effectively and safely perform all required duties
Post-entry / documentation		
15.	Confined space entry supervisor	Conducts a post-entry debriefing with entrants and attendants
16.	Confined space entry supervisor	Closes the permit by signing the permit closure section of the permit as warranted <ul style="list-style-type: none"> ▪ At the completion of the job ▪ At the end of the work shift ▪ When a change occurs in work conditions or methods that requires additional controls ▪ When a changes occurs that affects acceptable entry conditions If the permit is closed due to a new hazardous condition, a new permit is required.
17.	Confined space entry supervisor	Forwards the permit to the confined space program manager at Mailstop 84
18.	Confined space program manager	Reviews the closed permit, updates the confined space inventory if necessary, and maintains permits for at least one year from date of entry

6 References

- *SLAC Environment, Safety, and Health Manual* (SLAC-I-720-0A29Z-001), [Chapter 6, “Confined Space”](#)
- [Confined Space: Entry Method Selection Flow Chart](#) (SLAC-I-730-0A21S-050)
- Confined Space: Entry Permit (SLAC-I-730-0A21J-002) [pdf](#) or [Word](#)
- Confined Space: Alternate Entry Form (SLAC-I-730-0A21J-010) [pdf](#) or [Word](#)
- Confined Space: Non-permit Required Confined Space Entry Form (SLAC-I-730-0A21J-006) [pdf](#) or [Word](#)
- Confined Space: Temporary Declassification Form (SLAC-I-730-0A21J-009) [pdf](#) or [Word](#)
- [Confined Space: Posting Requirements](#) (SLAC-I-730-0A21S-051)
- [Confined Space Inventory](#)
- [Chapter 29, “Respiratory Protection”](#)
- [Chapter 51, “Control of Hazardous Energy”](#)
- [“Hot Work Permit-Fire System”](#)