



UNITED STATES MARINE CORPS

MARINE CORPS BASE

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CAMP LEJEUNE, NORTH CAROLINA 28542-0004

BO 5100.1A W/CH1
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BASE ORDER 5100.1A W/CH1

From: Commanding General
To: Distribution

Subj: PERMIT-REQUIRED CONFINED SPACE ENTRY PROGRAM (PRCSEP)

Ref: (a) NIOSH POCKET GUIDE TO HAZARDOUS CHEMICALS
(CURRENT YEAR)
(b) ACGIH TLV AND BEI HANDBOOK (CURRENT YEAR)
(c) 29 CFR 1926.353
(d) NAVSEA S6470-AA-SAF-010
(e) MCO P5100.8F
(f) 29 CFR 1910.146

Encl: (1) Definitions
(2) Permit-required Confined Space Inventory Template
Example

1. Purpose. To establish guidelines for the development of Standing Operating Procedures (SOP's) by the units, divisions, departments, and organizations of Marine Corps Base, Camp Lejeune (hereafter referred to as "Base") to ensure the safety of personnel required to enter a Permit-required Confined Space (PRCS). This Order will also establish guidelines to prevent unauthorized entry of PRCS. SOP's will be developed in accordance with this Order to ensure entry and work-related procedures regarding PRCS.

2. Cancellation. BO 5100.1.

3. Summary of Revision. This Order has been reformatted. It contains a substantial number of changes and must be completely reviewed.

4. Information. There are numerous confined spaces (such as storage tanks, pits, boilers, fuel cells, sewers, underground utility vaults, tunnels, and manholes) aboard Base. This Order is designed to protect personnel who must enter PRCS and may be exposed to hazardous atmospheres, engulfment, asphyxiation, entrapment, or any other safety or health hazard. The nature of PRCS can create unstable conditions, cause harmful vapor

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concentrations, and environments that are immediately dangerous to life and health (IDLH). Implementing and maintaining an effective PRCSEP can prevent these deaths, injuries, and illnesses.

5. Permit-Required Confined Space Entry Program (PRCSEP). The PRCSEP is designed to prevent unauthorized entry into PRCS, recognize and control hazards, establish procedures and practices for safe entry, and monitor the atmospheric conditions within the PRCS. The Program requires an attendant to be stationed outside PRCS during entry with procedures to summon rescuers and prevent unauthorized personnel from attempting a PRCS entry or rescue. It also includes procedures for entry operations, issuing and canceling entry permits, training, and reviewing the Permit Program annually.

a. The following measures will be implemented to prevent unauthorized entry into permit spaces:

(1) All personnel reasonably expected to enter PRCS will receive initial training concerning the characteristics, hazards, and location of PRCS within their work areas aboard Base.

(2) All confined spaces requiring a permit for entry will have a posted sign stating, **"DANGER: Confined Space - Enter By Permit Only."**

b. Prior to entering any PRCS, the atmospheric conditions must be evaluated. All levels of the PRCS must be tested prior to entry, including corners and pocket areas. All PRCS testing/monitoring must be done with calibrated direct-reading instrumentation designed to detect and measure gas/vapor concentrations within the PRCS. All pre-entry testing/monitoring will be conducted from the outside of the PRCS. Entry into a PRCS with acceptable conditions should take place as expeditiously as possible after completion of the pre-entry evaluation. **ONE MUST NEVER ENTER A PRCS WITHOUT FIRST TESTING ITS ATMOSPHERIC CONDITIONS.**

c. A PRCS may be entered when the following conditions are met:

(1) Oxygen concentration is between 19.5 and 22 percent.

(2) Toxic chemicals or other materials present within the PRCS are below the Occupational Safety and Health

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Administration (OSHA), Permissible Exposure Limit (PEL), or the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), whichever is more stringent.

(3) The PRCS is free from dangerous concentrations of explosive or flammable gases and/or vapors. If the atmospheric conditions within the PRCS indicate the presence of explosive or flammable gases and/or vapors, the PRCS may be entered as long as the concentration is below 10 percent of the Lower Explosive Limit (LEL).

(4) No engulfment hazard is present within the space.

(5) No recognized physical or biological hazards are within the PRCS.

(6) All hazardous energy sources, including but not limited to electricity, steam, and hydraulics, are locked or tagged out when possible.

(7) The PRCS to be entered is thoroughly purged, flushed, or ventilated as necessary to eliminate and control hazards.

(8) Barriers are provided to protect entrant(s) from external hazards and passers-by from hazards associated with the PRCS.

(9) A means and a protocol are available for summoning the Rescue and Emergency Services Team (REST), Base Fire and Emergency Services Division.

(10) A qualified employee is on-site to test and monitor conditions within the PRCS prior to and during the entry in accordance with the entry permit.

(11) If the hazards of the PRCS cannot be effectively removed or controlled, a hazard assessment must be done to determine if the entry can be made safely with Personal Protective Equipment (PPE). If a safe entry can be made, proper PPE must be provided and appropriately employed to minimize entrant(s) exposure to hazardous conditions.

(12) Atmospheric and other hazardous conditions within the space are continuously monitored during the entry.

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d. A two-person entry team (minimum) must be on-site to execute each entry; that team will consist of at least one entrant and one attendant. Both team members will be properly trained in their PRCSEP duties and named on the permit. Before entry, the team must perform a hazard assessment of the space, consisting of atmospheric testing/monitoring and the evaluation of all physical, chemical, and biological hazards.

e. The principle of lockout/tagout involves the control of hazardous energy such as electricity, steam, and hydraulics. Lockout/tagout procedures may also be utilized to protect against an engulfment or asphyxiation hazard. A PRCS can be double blocked and bled or blanked to eliminate or control a PRCS hazard.

f. If the PRCS is of a size, configuration, or depth that may require testing to be conducted from within the confines of the space, special procedures will be followed as referenced in paragraph 7 of this Order.

g. All necessary equipment involving work in PRCS will be provided at no cost to the employee. The types of equipment needed for a PRCS entry may include testing/monitoring equipment, ventilation equipment, communications equipment, PPE, barriers and shields, ingress and egress equipment, and rescue and emergency equipment. All equipment will be properly maintained and in good repair. All PRCSEP personnel will be properly trained regarding the use and care of such equipment.

h. Base personnel will not enter a PRCS under IDLH conditions due to the potential for very serious injury or death to occur in a short period of time.

i. Material Safety Data Sheets (MSDS) will be kept at the worksite for immediate availability when entrants are exposed to regulated, hazardous substances. This applies even if the hazardous substances are in concentrations below the PEL or TLV. In addition to MSDS's, references (a) and (b) may provide useful information regarding chemical hazards.

6. Permit System

a. Prior to entry of a PRCS, a permit must be obtained from the Confined Space Program Manager (CSPM), the Assistant Confined Space Program Manager (ACSPM), or a qualified entry supervisor. The permit will be valid for a time period not to exceed eight (8) hours.

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b. The PRCS permit must contain, at a minimum, the following information:

(1) Type of PRCS to be entered, facility number, and the date, time, location, and duration of entry.

(2) Name(s) of authorized entrant(s).

(3) Name(s) of authorized attendant(s).

(4) Name and signature of the entry supervisor authorizing the entry.

(5) An inventory of known hazards of the PRCS.

(6) Measures of hazard control/elimination with respect to hazardous energy, atmospheric hazards, and physical/biological hazards.

(7) Calibration information including date and time calibrated, serial number and model of the instrumentation, and whether or not the instrument passed calibration. This information can be ascertained from the daily calibration log.

(8) Minimum acceptable entry conditions required.

(9) Results of initial, continuous, and periodic tests (as directed) including the name of testing official, instrument used (including the serial and model number), and the date, time, location, and duration of testing.

(10) Identity of the emergency response team and how to contact them.

(11) Description of the communication procedures to be used among entry team members.

(12) List all applicable equipment, such as PPE, alarm systems, non-entry rescue equipment, and ventilation equipment, to be provided.

(13) Any additional information essential to ensure entrant safety.

(14) Copy of any additional permits that have been issued to authorize work in the space.

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7. Training

a. All entry supervisors, attendants, entrants, and emergency responders will receive proper training for their respective duties, including non-entry rescue, prior to participating in the PRCSEP. This training will consist of at least six (6) hours emphasizing the recognition, evaluation and control of PRC hazards; duties of entry supervisors, entrants, and attendants; proper use of portable gas detectors; interpretation of readings from portable gas detectors; descriptions and background of hazards regularly associated with PRCs; description of each type of PRC aboard Base and their associated hazards; introduction to commonly used references, guides, and handbooks; and the overall intent of this Order. All of the aforementioned individuals will also receive refresher training, to be provided by the CSPM or ACSPM at regular shop safety meetings on a semi-annual basis and as needed. All training must be documented with the employee's name, date, and signature of the trainer.

b. Specific training requirements are:

(1) Personnel participating in the PRCSEP will be trained for specific duties such as entrant, attendant, entry supervisor, and emergency responder.

(2) Training must be provided when:

(a) The employee is first assigned to the PRCSEP or before a change in duties.

(b) There is a change in a PRC that may present a new, unknown hazard for which the employee has not received proper training.

(c) There is reason to believe there are either deviations from the accepted entry procedures or inadequacies in an employee's knowledge and proper execution of the PRCSEP procedures.

c. Training provided to personnel in the PRCSEP will be designed to establish proficiency in the duties and procedures required by the PRCSEP.

d. All training documentation will be maintained on file for a minimum of three (3) years and will be readily available for

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review by personnel, supervisors, and inspectors.

8. Testing/Monitoring

a. The accuracy of testing and monitoring equipment for PRCS may be significantly affected under certain conditions of humidity, atmospheric pressure, temperature, or interfering chemicals. However, if the proper equipment is selected, calibrated, maintained, and operated by well-trained individuals, PRCSEP testing will ensure employee safety. All people performing tests and monitoring under the guise of the PRCSEP must be properly trained in the use and applicability of the testing and monitoring equipment.

b. Prior to performing any atmospheric testing of a space, all testing/monitoring equipment must be "bump tested" or gas-calibrated daily. This will be accomplished using a known gas sample representative of those gases expected to be found in the PRCS to ensure the proper working order of the instrument and sensors. All monitoring equipment will also be fresh air or "zero" calibrated prior to use on each PRCS entry throughout the day. If the equipment will not "zero" with the fresh air calibration, or does not properly calibrate using span gas, do not enter the space. Follow the manufacturer's recommendations for off-site calibration requirements. A log containing the calibrator's name and signature, instrument model and serial number, and calibration date, time, and results must be maintained for each atmospheric testing instrument. This log must be available to the CSPM for review.

c. Atmospheric testing and monitoring is required for two distinct purposes: (1) evaluation of the hazards of a PRCS, and (2) verification that acceptable entry conditions for a PRCS exist.

(1) Hazard Evaluation Testing. The atmosphere of a PRCS will be analyzed using instrumentation of sufficient sensitivity to identify and evaluate hazardous atmospheres and to allow for proper permit designations. Interpretation of this data and determination of entry procedures will be made by the CSPM, ACSPM, or the testing official.

(2) Verification Testing. The atmosphere of a PRCS, which may be hazardous in nature, will be tested for residues of all contaminants identified by hazard evaluation testing. The verification testing, conducted prior to and during the entry, must use the appropriate testing instrument to determine

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whether the residual concentrations are at acceptable levels for safe entry.

d. The duration of pre-entry testing, at each level of the space and in pockets and corners, must be at least equal to the response time specified by the manufacturer for the test instrument.

e. At a minimum, all PRCS must be tested for:

(1) Oxygen concentration (acceptable range: 19.5-22 percent).

(2) Combustible gases/vapors (acceptable range: less than 10 percent of the LEL).

(3) Carbon monoxide (acceptable range: less than 25 ppm).

(4) Hydrogen sulfide (acceptable range: less than 10 ppm).

The entrant(s) should not proceed into any areas of the PRCS without first testing those areas for the aforementioned constituents.

f. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested a distance of approximately four (4) feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

g. Order of Testing. A test for oxygen is performed first because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere. Combustible gases are tested next because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gases and vapors. If tests for toxic gases and vapors are necessary, they are performed last.

h. Maintenance of atmospheric monitoring instrumentation should be scheduled to take place on an annual basis to ensure the optimal functionality of the instrument. When maintenance is to be done, all sensors should be replaced and batteries should be checked for longevity. The instrumentation should be

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stored in an area that is not subject to temperature extremes or excessive humidity. Contact the CSPM for assistance as needed.

i. Entry teams should keep extra equipment on hand such as: additional tubing and splicing equipment, extra batteries, spare probe filters, etc.

9. Hot Work

a. A hotwork permit must be issued before any hotwork operations may take place. A hot work permit may only be issued by the following individuals: the GFE, AGFE, Base Fire and Emergency Services Division staff, and individuals trained and approved by the Base Fire and Emergency Services Division to issue hot work permits. In accordance with reference(c), either general, mechanical, or local exhaust ventilation will be provided whenever welding, cutting, or heating is performed in a confined space. Exhaust ventilation should be designed to draw air from around the workspace and extract air to the outside of the space.

b. When acceptable atmospheric conditions cannot be maintained within the PRCS, airline respirators will protect entrants in accordance with reference (c). These types of respirator systems will most likely require special communication devices due to the nature of the breathing system components. When airline respirators are used in PRCS, continuous atmospheric monitoring is required.

c. Special care should be taken to ensure that hoses used to transport welding gases, such as oxygen and acetylene, are in good repair and are not leaking. Leaking oxygen hoses are the number one cause of elevated oxygen levels in PRCS and may lead to an explosion.

10. Gas Free Engineering

a. When performing hot work activities inside or on the outside of a confined space, the interior atmospheric conditions must be tested prior to the commencement of work to ensure the absence of flammability/explosive hazards. If the test reveals atmospheres below 10 percent of the LEL and all hazards have been controlled; a hot work permit may be issued by authorized confined space personnel (i.e. the entry supervisor) as described in paragraph 8.a. If the LEL is 10% or greater, the

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Gas Free Engineer (GFE) or Assistant Gas Free Engineer (AGFE) must be contacted to devise an appropriate procedure to safely conduct hot work operations.

b. When a flammability/explosion hazard exists (LEL > 10%) within a PRCS, the GFE or AGFE must develop an operational protocol designed to utilize accepted gas free engineering practices to eliminate or control those hazards. When hazards are controlled by inerting or pressing up a space, work must only be done from the outside of the space or vessel. All measures utilized for the control of hazardous conditions within a confined space must meet the requirements of reference (d) and must be approved by the GFE or AGFE.

c. The GFE or AGFE will issue a Flammable/Explosive Vapor Test Certificate (FEVTC) when it is determined that acceptable conditions exist. The certificate will be valid for not more than eight (8) hours and will contain the following information:

- (1) Date and time of test.
- (2) Vessel/Vehicle number and description.
- (3) Last contents of the vessel.
- (4) Worker's name, job title, and contact information.
- (5) Status of atmospheric conditions inside the vessel.
- (6) Time of certificate expiration.
- (7) Type of operation.
- (8) Additional remarks/requirements.
- (9) Signature of GFE or AGFE.
- (10) Type of atmospheric testing instrument used including the manufacturer, model number, serial number, and calibration results/information.
- (11) Requirements for re-testing or continuous monitoring.

11. Rescue and Emergency Services Team (REST) and Non-Entry Rescue Procedures

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a. Rescue and emergency services are to be provided on-site by the Base Fire and Emergency Services Division. In certain cases, as specified by the permit, the REST may be required to be on-site throughout the duration of the entry operation. Each member of the REST must be trained per the PRCSEP training requirements of this Order and hold current certifications in Basic First Aid and Basic Life Support (cardiopulmonary resuscitation).

b. Each member of the REST must receive training for proper use of PPE and equipment necessary for making rescues from PRCs. This equipment includes, but is not limited to, eye protection, gloves, body and foot protection, hard hats, harnesses, stretchers, rope, rescue rigging systems.

c. Each member of the REST must practice simulated PRCs rescues annually from each type of PRCs located aboard Base. These operations include rescuing dummies or mannequins from simulated PRCs that exhibit similarities to known PRCs aboard Base.

d. Non-entry retrieval systems or methods must be used whenever an authorized entrant enters a PRCs unless the retrieval system would increase the risk of entry or would not facilitate the rescue of the entrant. Retrieval systems will meet the following requirements:

(1) Each authorized entrant will use a full body harness with a retrieval line (lifeline) attached at the center of the entrant's back at or near shoulder level.

(2) Retrieval lines are attached to a mechanical device or a fixed point outside of the PRCs to enable rescue to begin immediately.

(3) Mechanical retrieval devices will be in place and ready for use when personnel enter a vertical PRCs that exceeds five (5) feet in depth. The full body harness of each entrant will be directly hooked to the mechanical device's retrieval line. The mechanical retrieval device must be specifically designed for confined space rescue and may not be used for any other purpose.

(4) The following are some examples of mechanical retrieval devices: a tripod and a winch, a wall mounted uni-hoist type system, a truck mounted uni-hoist type system or a specially designed device for use with PRCs's of unusual

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configurations. These specially designed devices must be approved by the CSPM.

(5) Mechanical devices used in retrieval systems will provide a mechanical advantage of at least 4:1 (i.e., a 25-pound force can move a load of 100 pounds). Mechanical devices will be designed so as not to allow inadvertent lowering of an entrant once retrieval has begun.

(6) The REST will be summoned immediately upon determination of the need for a non-entry rescue.

(7) The protocol for summoning the REST in an emergency will be tested annually. This test will include summoning the REST using the prescribed protocol. The REST will arrive on site and execute a simulated rescue using a dummy. The CSPM or ACSPM for the unit and the on-duty Fire Chief should be on site during the exercise. This will help prepare all parties for an actual confined space emergency.

(8) The ratio of entrants to attendants will not exceed 3:1 unless approved by the CSPM. The equipment manufacturer's recommendations will be followed regarding use of all non-entry rescue equipment.

(9) All non-entry rescue equipment will be carefully inspected prior to use.

12. Responsibilities

a. Department Heads/Commanding Officers/Directors

(1) Those units, divisions, departments and organizations who employ individuals who must enter PRCS as defined in enclosure (1) must develop and publish an internal PRCSEP SOP to include an inventory, per enclosure (2), for each type of PRCS within the unit. Assistance in the development of this SOP can be requested from the CSPM/ACSPM. The inventory will include:

- (a) A unique PRCS ID number.
- (b) The classification of the PRCS.
- (c) The facility numbers of like spaces.
- (d) The characteristics of the space.

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- (e) The potential hazards of the space.
- (f) Required PPE.
- (g) Required non-entry rescue equipment.
- (h) Atmospheric testing requirements.

(2) The internal PRCSEP SOP must be developed based on the types of PRCS being entered, the frequency of entry into PRCS, the hazards encountered in each PRCS type, and the testing and monitoring equipment available. The purpose of the SOP is to ensure that entries into PRCS are safely executed per all applicable regulations and standards. The SOP must be approved by the CSPM. The SOP shall include (for each PRCS) the pre-entry protocol, including permit issuance and atmospheric testing; a background of the specific hazards of the PRCS and a job hazard analysis; protocol for entry operations including the types of work being done inside the PRCS and atmospheric testing/monitoring procedure; and the non-entry rescue protocol, including required equipment and how to configure the equipment for the job at hand.

(3) Ensure compliance with the training requirements for all personnel subject to PRCS entries as set forth in this Order and references (e) and (f).

(4) Ensure that all personnel adhere to the SOP for all entries into PRCS.

(5) Conduct regular program audits to ensure compliance with applicable regulations and instructions.

b. Resident Officer in Charge of Construction (ROICC)

(1) Ensure that contractors involved in PRCS work aboard Base have a PRCSEP in accordance with this order.

(2) Conduct inspections to verify PRCSEP compliance at contractor worksites prior to contractor entry into PRCS and during the entry period as required by the permit.

(3) Review and approve the contractor's PRCSEP, the contractor's entry permit, and entry protocol for PRCS.

(4) Ensure that contractors have trained their personnel concerning the hazards of the PRCS they will enter and work in aboard Base.

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(5) Ensure that all contract personnel have received the required PRCS training and hold current certification for the duties to be performed.

c. Base Fire Chief

(1) Provide required rescue services for the PRCSEP as required by this Order and references (e) and (f).

(2) Maintain appropriate rescue and training equipment to ensure the ability of the Fire and Emergency Services Division to execute rescue and recovery of entrants from PRCS aboard Base.

(3) Issue hot work permits and designate, in writing, individuals who are part of the PRCSEP and authorized to issue hot work permits.

(4) Provide and document annual training for Fire and Emergency Services Division personnel regarding PRCS entry rescue for each type of PRCS aboard Base.

(5) Maintain a current recall roster of the CSPM and all ACSPM in the event of a weekend emergency.

d. Base Safety Manager

(1) Maintain overall cognizance of the PRCSEP.

(2) Serve as liaison between the CSPM and the Executive Safety Management Committee.

(3) Provide the required funding and support for the oversight of the PRCSEP by the CSPM.

e. Confined Space Program Manager (CSPM)

(1) Provide oversight and guidance for the PRCSEP and for all organizations aboard Base.

(2) Conduct semi-annual audits of entry operations, SOP's, and training records. Provide recommendations for compliance with PRCSEP requirements and applicable regulations.

(3) Issue test entry permits for newly recognized PRCS. Oversee the initial testing/monitoring process when the PRCS is of a size, configuration, or depth that requires testing to be conducted from within the space per paragraph 7 of this Order.

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(4) Maintain records of entry operations (cancelled permits) for one year from the date of entry.

(5) Provide the Base Fire and Emergency Services Division with a current recall roster of the CSPM and all ACSPM's in the event of an after-hours or weekend emergency.

(6) Conduct an annual review of the PRCSEP.

(7) Halt any PRCS operation not in compliance with the permit, applicable regulations or if unsafe practices are observed.

(8) Upon request, assist in the acquisition of additional specialized testing for MCB activities working in PRCS.

f. Section Supervisors/Shop Supervisors/Assistant Confined Space Program Managers (ACSPM)

(1) Identify all personnel involved in the PRCSEP and provide names, job titles, phone numbers, e-mail addresses and assigned PRCSEP duties to the CSPM annually.

(2) Review all permits after the termination of entry operations for correctness and compliance.

(3) Audit at least one entry, by each ^{PRCSEP} ~~CSPM~~ employee, semi-annually to determine safety awareness and evaluate the employee's level of competency, or provide annual refresher training approved by the CSMP.

(4) Ensure that all personnel involved in the PRCSEP receive the required initial training and appropriate refresher training. Maintain instruction documentation for three years. Forward copies of documentation to the CSPM for review within 15 days of completing training.

(5) Ensure all PRCS's are properly labeled per reference (f).

(6) Ensure that all cutting, welding, brazing, and heating performed in PRCS is conducted per this Order and the local SOP.

(7) Ensure entry team personnel are provided with all required entry, communication, and rescue equipment.

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(8) Submit copies of the cancelled entry permit to the CSPM for each PRCS entry operation within thirty (30) days of the permit cancellation.

(9) Ensure PRCSEP personnel are certified by the CSPM in writing, and carry their PRCS certification card with them at all times during their work shift.

(10) Ensure that only the assigned entry supervisor, attendant, or entrant performs atmospheric tests and assesses existing hazards within the PRCS. Further ensure that one member of the entry team monitors atmospheric conditions from outside the space.

g. Entry Supervisors

(1) Conduct or verify pre-entry atmospheric testing. Ensure additional testing/monitoring of the PRCS, as appropriate. Confirm that all required equipment is in place and functioning properly prior to the commencement of entry operations.

(2) Issue and cancel entry permits. When entry operations cease, forward a copy of the cancelled permit to the CSPM within one week.

(3) In the case of emergency entries, or entry operations conducted outside the scope of normal work hours, notify CSPM as soon as possible after commencement of emergency procedures.

(4) Remain cognizant of all conditions in and around the PRCS to be entered to ensure the safety of the entry team. Perform a hazard analysis and be aware of all possible hazards that may be encountered during entry. The entry team must be made aware of all present and potential hazards.

(5) Verify communication with the REST. Ensure information regarding all associated hazards is provided to the REST in the case of an emergency.

(6) Notify the CSPM as soon as possible with regard to entry into PRCS with existing hazards that cannot be eliminated or controlled, or when IDLH conditions are present.

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(7) If unforeseen hazards are encountered or the safety of the entry team comes into question, contact the shop supervisor and the CSPM immediately, evacuate entrants, and prohibit access to the PRCS. Annotate any such situations or conditions on the entry permit.

(8) Terminate the entry and cancel the permit when the entry is complete or if a questionable condition arises.

(9) Prevent any unauthorized individuals from entering a PRCS during an entry operation. If necessary, contact the Military Police to assist with the removal of disruptive individuals.

(10) A confined space entry permit is non-transferable. Another certified entry supervisor may relieve entry supervisors; however, it must be noted on the permit along with the individual's name and time of the change. The new entry supervisor must be fully briefed on the entry operation, hazards within the space, signs and symptoms of hazard exposure, name(s) of the entrant(s), conditions of the permit, and any additional pertinent information. If the briefing will interfere with the entry supervisor's duties, the entrant(s) must be evacuated from the space prior to the briefing. An entry supervisor may serve simultaneously as an attendant or authorized entrant.

h. Entrants

(1) Know the hazards associated with entry into the PRCS and remain cognizant of the method, signs and symptoms, and consequences of exposure to those hazards.

(2) Inspect and test all equipment and tools prior to entry.

(3) Do not enter PRCS before issuance of the entry permit and before all levels of the space, including corners and pocket areas, have undergone atmospheric testing and been declared safe.

(4) Communicate with the attendant to facilitate monitoring of entrant status.

(5) Alert the attendant upon recognition of any warning sign or symptom of exposure or detection of a prohibited or hazardous condition.

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(6) Exit the PRCS as quickly as possible whenever an order to evacuate is given by any member of the entry team, or an evacuation alarm is activated.

i. Attendants

(1) Know the hazards associated with entry into the PRCS and remain cognizant of the methods, signs and symptoms, and consequences of exposure to entrants.

(2) Conduct pre-entry atmospheric testing and monitoring of the PRCS. Ensure all procedures and required equipment are in place prior to entry.

(3) Maintain an accurate accountability of entrants in the permit space. Ensure a valid entry permit is used to track and identify authorized entrants.

(4) Remain directly outside of the PRCS during entry operations.

(5) Prior to being relieved, the new attendant must be fully briefed on the entry operation, hazards within the space, signs and symptoms of hazard exposure, name(s) of the entrant(s), conditions of the permit, and any additional pertinent information. If the briefing will interfere with the attendant's duties, the entrant(s) must be evacuated from the space prior to the briefing.

(6) Communicate continuously with authorized entrants to monitor their status and alert them of the need to evacuate the space.

(7) Monitor activities inside and outside the PRCS to determine if it is safe for entrants to remain in the space. Order immediate evacuation if there is a detection of a prohibited condition, observation of hazard exposure, discovery of a situation that could endanger the entrant(s), or if it becomes unsafe to perform required duties.

(8) Summon the REST and other emergency services immediately if an entrant needs assistance.

(9) Give verbal warning to remain clear to all unauthorized individuals who approach or attempt to enter a PRCS during entry operations.

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(10) Perform non-entry rescue as specified by the rescue procedure and the entry supervisor.

(11) Do not simultaneously monitor more than one PRCS entry operation or engage in concurrent job duties.

(12) **DO NOT, UNDER ANY CIRCUMSTANCES, ENTER THE PRCS.**

j. Contractors. When contractors or other non-DoD personnel enter Base PRCS to perform work they assume the following obligations:

(1) Notify the ROICC and CSPM prior to PRCS entry. Upon notification, receive entry protocol guidance from the ROICC and/or the CSPM.

(2) Adhere to all applicable regulations.

(3) Do not enter a PRCS without prior approval of the ROICC via the entry permit.

(4) Notify respective rescue services. Also, verify the availability of emergency response and viable means of communication with their rescue service provider.

k. Industrial Hygiene Department. The Industrial Hygiene Department must be available to provide specialized testing of PRCS that contain toxins listed in references (a) and (b) to ascertain whether concentrations of hazardous chemicals are within the prescribed limitations.

13. Special Considerations. In the industrial area of Base, there is an active groundwater contamination site that may impact the PRCS internal atmospheres. It is possible that high levels of hydrocarbon vapors, from a previous fuel spill, could accumulate within these PRCS, and create a severe health risk. The area of concern has the following perimeter: Holcomb Boulevard; Louis Street; Ashe Street and Gum Street. When initiating PRCS entries within this perimeter, LEL readings must be less than three (3) percent.

14. Applicability and Scope. This Order applies to all personnel who enter PRCS and their contractors.

15. Reserve Applicability. This Order is applicable to the Marine Corps Reserve.

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16. This Order has been coordinated with and concurred in by the Commanding Generals, II Marine Expeditionary Force; 2d Marine Division, 2d Force Service Support Group, and U.S. Marine Corps Forces, Atlantic, and by the Commanding Officers, Marine Corps Air Station, New River, Naval Hospital, and the Naval Dental Clinic.

W. A. Meier

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Chief of Staff

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BO 5100.1A Ch 1

BISS/SAFE

JUL 29 2005

BASE ORDER 5100.1A Ch 1

From: Commanding General
To: Distribution List

Subj: PERMIT-REQUIRED CONFINED SPACE ENTRY PROGRAM (PRCSEP)

1. Situation. To direct pen changes to the basic Order.
2. Mission. To issue a Change transmittal to the basic Order.
3. Execution

a. On page 15, paragraph 12f(3), replace "CSPM" with "PRCSEP" and at the end of the sentence, add "or provide annual refresher training approved by the CSPM."

b. On page 20, following the signature block, add "DISTRIBUTION: A".

4. Administration and Logistics. File this Change transmittal immediately following the signature page of the basic Order.

5. Command and Signal

a. Signal. This Change transmittal is effective the date signed.

b. Command. This Change is applicable to personnel who enter the PRCSEP.


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Chief of Staff

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DEFINITIONS

Acceptable Entry Conditions. The conditions that must exist in a permit space to allow entry and to ensure that personnel involved with a Permit-required Confined Space entry can safely enter and work within the space.

Assistant Confined Space Program Manager (ACSPM). The individual who performs the duties of the Confined Space Program Manager (CSPM) in his/her absence. The ACSPM is appointed by the Commanding General in writing and must successfully complete Course Identification Number (CIN) A-493-0030 prior to appointment.

Assistant Gas Free Engineer (AGFE). The individual appointed in writing by the Commanding General, who performs the duties of the Gas Free Engineer (GFE) in his/her absence. The AGFE must successfully complete Course Identification Number (CIN) A-493-0030 prior to appointment.

Attendant. An individual stationed outside one permit space who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit required confined space entry program.

Authorized Entrant. An employee who is authorized by the employer to enter a Permit-required Confined Space.

Blanking or Blinding. The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line or duct with no leakage beyond the plate.

Confined Space. A space that is large enough for an employee to enter and perform assigned work. The space has limited or restricted means for entry or exit. (For example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry,)

Confined Space Program Manager (CSPM). The individual appointed, in writing by the Base Commanding General as the manager of the Permit-required Confined Space Entry Program and

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the Gas Free Engineer. The CSPM must successfully complete Course Identification Number (CIN) A-493-0030 prior to appointment.

Direct Reading Instrumentation. Instrumentation that provides an accurate, reproducible reading in appropriate units without requiring any additional computations for the user.

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

Enclosed Space. By virtue of its nature or design, is of such a shape or depth, that natural ventilation or the natural movement of air is restricted, including open top storage tanks, degreasers, dip tanks, pits, trenches, and other spaces with similar attributes.

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

Entry Permit. A printed document the employer provides to allow and control entry into a Permit-required Confined Space.

Entry Supervisor. The person responsible for determining if acceptable entry conditions are present at a permit required space and responsible for authorizing entry and overseeing entry operations and safety.

Gas Free Engineer (GFE). An individual who successfully completed Course Identification Number (CIN) A-493-0030, PRCS Entry, and is assigned in writing by the Base Commanding General as having responsibility for the administrative and technical activity of the Gas Free Engineering Program.

Hazardous Atmosphere. An atmosphere that may expose personnel to the risk of death, incapacitation, impairment, the ability to escape unaided from a permit space, or acute illness from one or more of the following causes:

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- Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL). Due to characteristics of test equipment, any reading of flammable, toxic, or abnormal oxygen are cause for non-entry until the CSPM is contacted.

- Airborne combustible dust at a concentration that meets or exceeds its LFL. This concentration may be approximated as a condition in which the dust obscures vision at a distance of five (5) feet or less.

- Atmospheric oxygen concentration below 19.5 percent or above 22.0 percent.

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

Hot Work. Welding, cutting, brazing, or heating to temperatures of 400 degrees Fahrenheit or more.

Hot Work Permit. The employer's written authorization to perform operations (for example, riveting, welding, cutting, burning and heating) capable of providing a source of ignition.

Immediately Dangerous to Life or Health (IDLH). Any condition that poses an immediate or delayed threat to life, would cause irreversible adverse health effects, or would interfere with an individual's ability to escape unaided from a PRCS.

Inerting. The displacement of the atmosphere in a confined space or a vessel by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. This procedure produces an IDLH oxygen-deficient atmosphere.

Isolation. The process by which a PRCS is completely protected against the introduction of energy and material into the space.

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

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Non-Entry Operations. Operations where work does not require physical entry into the PRCS (i.e., welding the outside of a fuel cell, ship hull, or liquid tanker).

Oxygen-Deficient Atmosphere. Contains less than 19.5 percent oxygen stetxygen-Enriched Atmosphere. An atmosphere containing more than 22 percent oxygen by volume.

Permit-Required Confined Space (PRCS). 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.
- Has an internal configuration in which 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.

Permit-Required Confined Space Entry Program (PRCSEP). The Program for controlling and protecting personnel from permit space hazards and regulating employee entry into permit spaces.

Permit System. A written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Pressing-Up. The process of filling a space with a liquid to exclude a flammable vapor-air mixture from a space.

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

Rescue and Emergency Services Team (REST). The personnel designated to perform entry rescue services from PRCS's.

Retrieval System. The equipment (including a mechanical retrieval device (where required), retrieval line, chest or

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full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from PRCS's.

Testing. The process of identifying and evaluating the hazards in a permit space.

Testing Official. The individual (either the CSPM, ACSPM, entry supervisor, attendant, or other qualified person) appointed in writing by the CSPM who may test or monitor atmospheric conditions within PRCS's.

Vessel. A hollow utensil used as a container, especially for liquids; a craft used for navigating on water or in the air.

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PERMIT-REQUIRED CONFINED SPACE INVENTORY TEMPLATE EXAMPLE

PRCS ID # (Department Specific)	SD001 Steam Distribution #001)
CLASSIFICATION	Steam Pit, open top, grated
NUMBER OF LIKE SPACES	26
FACILITY NUMBERS	HP-30, AS-12, etc., (Notate all facility numbers of like spaces.)
CHARACTERISTICS	6-8 feel deep pit, metal grate covering pit, cement walls, single access hatch with fixed ladder.
POTENTIAL HAZARDS	Hazardous atmosphere, snakes, spiders
ACTUAL HAZARDS	Active steam lines
REQUIRED PPE	Hard hat, gloves, coveralls, safety glasses, safety shoes/boots
REQUIRED RESCUE EQUIPMENT	Mechanical retrieval device, retrieval line, full-body harness, radio, cell phone
ATMOSPHERIC TESTING REQUIREMENTS	Pre-entry testing, continuous monitoring by the attendant
COMMON WORK PRACTICES	Preventative maintenance, valve replacement/repair, steam lead repair, etc.
OTHER CONSIDERATIONS	If present, pump water out prior to entry. When possible, lock out live steam.

This type of inventory entry will be completed for each type of Permit Required Confined Space within each department/shop and will be part of the department/shop SOP. This is the minimum information required. Any other pertinent information will also be provided.

ENCLOSURE (2)