National Park Service Permit-Required Confined Space Entry Policy

The conditions encountered by National Park Service employees when working in confined spaces are capable of causing serious bodily injury, illness and death. Accidents often occur because of the failure to recognize the confined space as a hazardous environment and subsequent failure to implement a systematic process to ensure that necessary controls are in place. It is the policy of the National Park Service to identify all confined spaces, evaluate the associated hazards, communicate hazards to workers, prevent unauthorized entry, control hazards for a safe entry and utilize a permitting process to ensure controls are implemented prior to entry. Parks will comply with the requirements of 29 CFR 1910.146, Permit-Required Confined Space Entry.

Scope.This section contains requirements for practices and procedures to protect employees in general industry from the hazards of entry into permit-required confined spaces.

Definitions

Excavation — Any man-made cut, cavity, trench or depression in an earth surface formed by earth removal.

Trench (Trench excavation) — A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structures to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

References

1. 29 CRF 1910.146. Permit-Required Confined Space Entry.

2. NPS RM 58. Structural Fire.

Program Elements

1. *Identify Permit-Required Confined Spaces*. Conduct an inventory to identify confined spaces on park property or under the control of the park. Evaluate these to determine the hazards associated with each one. Determine whether or not they are permit-required confined spaces (permit spaces).

2. *Inform Employees and Post Signs*. If permit spaces exist in the park, post them with danger signs at the entrance to each space. If spaces cannot be posted, inform employees of their existence and location.

3. *Prevent Unauthorized Access*.Take effective measures to prevent unauthorized entrance into permit spaces.

4. *Inform Contractors*. Inform contractors or other employers of hazards when their work involves entry into permit spaces within the park. Ensure they are prepared to enter permit-required confined spaces in accordance with 29 CFR 1910.146 and applicable state regulations prior to any entry. Coordinate multi-employer work in or near permit spaces.

5. *Prepare a Written Permit Space Program*. Prepare and implement space-specific procedures and work practices to eliminate or control confined space hazards. Use control measures to prevent unauthorized entry into a space; specify acceptable entry conditions; isolate hazardous energy sources; eliminate atmospheric hazards by purging, inerting, flushing or ventilating the space; provide barriers to protect entrants and pedestrians; and verify acceptable entry conditions for the duration of the entry.

6. *Implement a Permit System*. Establish a permit process that will confirm effective controls are in place and that safe entry conditions exist prior to permit space entry.

7. *Ensure Emergency and Rescue Service Availability*. Provide for timely rescue and other emergency services congruent to the specific hazards associated with the park's confined spaces.

8. *Train Personnel*. Provide training so that all employees who serve as authorized entrants, attendants or entry supervisors have the understanding, knowledge and skills necessary for the safe performance of their assigned duties.

9. *Keep Records*. Maintain copies of all confined space evaluations. The park shall maintain all permits for one year. Permits and the witten program will be reviewed annually.

Permit-Required Confined Space
Entry Program Implementation Actions

Step 1 ❑ Conduct an inventory to identify confined spaces in your park or under your park's control. Evaluate the hazards associated with each and determine whether it is a permit space (see Appendices A and B). Refer to 29 CFR 1910 146, Appendix A for a decision flow chart that will aid in classifying spaces.

Step 2 ❑ Inform employees that permit spaces exist and label the entrance to the space with the words, "DANGER, PERMIT—REQUIRED CONFINED SPACE, DO NOT ENTER."

Step 3 ❑ Advise contractors that permit spaces are present and outline existing hazards (see Appendix C).

Step 4 ❑ If park employees will not enter the space, secure the space to prevent unauthorized entry.

Step 5 ❑ If park employees will be required to enter permit spaces, prepare a written permit-required confined space entry program. General program requirements are provided in Appendix D. Prepare specific entry requirements for each space or a set of similar spaces (Appendix E provides examples of space-specific entry requirements). Alternate methods (see Appendix F) may be used under certain circumstances.

Step 6 ❑ Implement a permit system (see Appendix G).

Step 7 ❑ Train employees who will serve as attendants, authorized entrants and entry supervisors (see Appendices H and I). (Train in-house emergency rescue personnel as entrants with specific emergency response duties. Provide access to permit spaces to non-NPS rescue personnel for practice if they are to be depended upon for rescues of NPS personnel.)

Step 8 ❑ Provide in-house emergency rescue personnel, the training, equipment and access to permit spaces for practice rescues so that personnel have the capabilities required by OSHA to safely conduct confined-space rescues.

Step 9 ❑ Review entry permits and the permit space written program annually.

Technical Appendices

Appendix A: Confined Space and Permit-Required Confined Space Definitions

Appendix B: Confined Space Evaluation Worksheet

Appendix C: Entry of Contracted Personnel

Appendix D: General Requirements and Entry Procedures

Appendix E: Space-Specific Hazards and Entry Requirements (Examples)

Appendix F: Alternate Entry Procedures

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Appendix H: Employee Training Requirements

Appendix I: Attendant, Entrant and Entry Supervisor Duties and Responsibilities

Appendix A: Confined Space and Permit-Required Confined Space Definitions

Confined space: A space that has the following characteristics*:*

1. Is large enough and so configured that an employee can bodily enter and perform assigned work.

2. 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).

3. Is not designed for continuous employee occupancy.

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

1. Contains or has a potential to contain a hazardous atmosphere.

2. Contains a material that has the potential for engulfing an entrant.

3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.

4. Contains any other recognized serious safety or health hazard.

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

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

Authorized entrant: An employee who is authorized by the employer to enter a permit space.

Entry supervisor: The person (such as a foreman or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned. This person authorizes entry, oversees entry operations and terminates entry as required by this section. NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

Entry: The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space. Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

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

Hazardous atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury or acute illness from one or more of the following causes:

1. Flammable gas, vapor or mist in excess of 10 percent of its lower flammable limit (LFL).

2. Airborne combustible dust at a concentration that meets or exceeds its LFL.

3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.

4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part, and which could result in employee exposure in excess of its dose or permissible exposure limit.

5. Any other atmospheric condition that is immediately dangerous to life or health. "Hot Work Permit" means the employer's written authorization to perform operations (for example: riveting, welding, cutting, burning and heating) capable of providing a source of ignition.

Park Structural Fire Coordinator: The person in the park who has been properly trained and designated to issue Hot Work permits under the requirements of NPS RM58.

Appendix B: Confined Space Evaluation Worksheet

(This form may be used to document initial evaluations of confined spaces and to develop space-specific procedures and requirements.)

Space Identification: _____

Reasons of Entry: 1. _____

2. _____

3. _____

Hazards: 1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Surveillance and Inspection Requirements: (Include testing required and frequency)

_____

_____

_____

_____

Ventilation Requirements:

_____

_____

_____

_____

Special Entry Requirements:

Personal Protective Equipment Requirements:

Rescue Equipment and Procedures:

Appendix C: Entry of Contracted Personnel

When contractors perform work that involves permit space entry, the park will:

1. Inform the contractor that the workplace contains permit-required confined spaces and that entry must be in compliance with 29 CFR 1910.146.

2. Inform the contractor of the identified hazards associated with the space.

3. Inform the contractor of any hazard controls implemented by the park as well as any appropriate precautions.

4. Debrief the contractor after entry operations are finished to discuss any problems or hazards encountered during the entry.

5. Coordinate entry operation of multiple employers working simultaneously.

Each contractor who is retained to perform permit space entry operations will:

1. Comply with all permit space requirements outlined in 29 CFR 1910.146.

2. Obtain any available information regarding space entry hazards and operations from the park.

3. Coordinate entry operations with the park and contracted personnel when they will be working simultaneously in or near a permit space.

4. Inform the park of any hazards or problems confronted or created during entry activities.

5. Provide a copy of their site-specific, permit-required, confined space entry plans to the contracting officer.

Appendix D: General Requirements and Entry Procedures

Before entry into a permit space is authorized, an entry permit shall be prepared to document that the space is safe to enter. The entry supervisor will prepare the entry permit and sign it when all requirements and acceptable entry conditions have been met. The entry supervisor will provide each authorized entrant (or that employee's authorized representative) an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces.

Each participant in the entry activity will review his/her responsibilities and duties and ensure that those responsibilities have been met.

The following will be completed before entry is authorized.

1. Meet all space-specific requirements for acceptable entry conditions.

2. Make Material Safety Data Sheets available on-site for any hazardous or toxic product expected to be encountered.

3. Isolate the space. Storage tanks, process vessels, sumps, pipelines, pits and similar spaces must be isolated from any other pipeline system prior to being entered. All connecting lines must be physically disconnected or blinded at a point as near as possible to tanks or vessels. The practice of double block and bleed does not meet the definition of blinding when personnel entry is involved. Pipelines between the confined space and the first valve, blank or associated equipment may contain material or hazardous contaminants. Therefore the isolation procedure must ensure that such piping has been flushed, cleaned or purged.

4. Depressurize equipment under positive or negative pressure.

5. Lockout and tag-out equipment, systems and processes. Successful isolation shall be confirmed by the entry supervisor prior to allowing entry.

6. Ensure electrical equipment including tools, lighting, communications and test equipment used in hazardous locations meet the appropriate requirements of 29CFR 1910.399 and NFPA 70.

7. Use the appropriate electrical equipment or systems where there is a potential for electrical shock. This includes protection such as ground fault circuit interrupters (GFCI), assured grounding systems, double-insulated tools, separately derived systems and low-voltage systems.

8. Guard all openings to the space with appropriate barriers to prevent accidental fall.

9. Post warning signs.

10. Test the atmosphere with calibrated, direct-reading instruments for:

    a. Oxygen (level must be between 19.5 and 23.5 %).
    b. Flammability (less than 10% of LEL).
    c. Potential toxic air contaminants.

    Note: Normal atmospheric conditions are the goal for entries. However, under certain circumstances, entry may be required when a hazardous atmosphere exists such as when ventilation systems are not capable of controlling the hazard, when entry is required in order to set ventilation systems, or during entry rescues. In these cases, appropriate exposure control measures, such as SCBA or supplied air respirators, must be planned for and implemented.

11. Continuous forced-air ventilation shall be used as follows:

    a. Ensure ventilation equipment is set up so that source air is free from airborne contaminants.

    b. Ensure that ventilation is directed toward the area where the entrant is working.

12. Test the atmosphere periodically for O2, LEL and toxic gases or vapors during entry. Follow any specific periodic monitoring instructions prescribed for spaces. In some cases, continuous monitoring will be required.

13. If an uncontrolled hazardous atmosphere (i.e., atmospheric hazards not specified on the entry permit) is detected during entry.

    a. Entrants not wearing appropriate respiratory protection for the situation must leave the space immediately.

    b. The space shall be evaluated to determine how the hazardous atmosphere developed.

    c. The hazards will be controlled prior to re-entry into the space.

14. Ensure that when drains, vents or piping is left open, reversal of flows or air contamination from adjacent processing or chemical handling cannot enter the confined space.

15. Ensure trained rescue personnel and a means of summoning those services are available and that at least one attendant is outside the space.

16. Ensure safe means of entry and egress from the space are available.

The completed permit will be made available at the time of entry to all authorized entrants so that they can confirm that all pre-entry preparations have been completed. The permit shall be placed in a clear plastic protective cover and affixed securely to, or near, the entrance.

The entry supervisor will terminate entry and cancel the entry permit when the entry operations covered by the permit have been completed, or when a condition that is not allowed under the entry permit arises in or near the permit space. The permit space will be re-evaluated in the presence of any authorized entrant (or that employee's authorized representative) who requests such re-evaluation because the entrant or representative has reason to believe that the evaluation may not have been adequate.

No food, smokeless tobacco or beverages will be taken into a confined space.

Once the job is complete and all entrants have exited the space, and the space is ready to be returned to normal service, the entry supervisor will debrief personnel involved in the entry and cancel the permit. Any problems encountered during the entry operation shall be noted so that appropriate revisions to the permit space program can be made.

Canceled entry permits will be kept on file with the safety officer for at least one year.

Rescue

Attendants will only attempt non-entry rescue. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk to the entrant or would not contribute to the rescue of the entrant. Non-entry retrieval systems shall meet the following requirements:

1. Each authorized entrant shall use a chest or full body harness with retrieval line attached at the center of the entrant's back near the level of the shoulder or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness if it can be demonstrated that the use of a chest or full body harness is not feasible, that the harnesses create a greater hazard and that the use of wristlets is the safest and most effective alternative.

2. The bitter end of the retrieval line shall be attached to a mechanical device or fixed point outside the space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve entrants from spaces more than five feet deep.

If in the course of an entry an attendant becomes aware that the entrant needs assistance in escaping from the space, the attendant will:

1. Summon rescue and other emergency services.
2. Begin non-entry rescue procedures.

If an injured entrant is exposed to a hazardous material, a copy of the MSDS for that material will be made available to the medical treatment facility. Specific rescue requirements will be included in written, space-specific entry programs and should include, where appropriate, decontamination requirements in the event of hazardous material exposure.

Attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations and if they have been relieved of their attendant duties by another qualified attendant.

Appendix E: Example Space-Specific Written Permit Space Programs

Hazard information and entry procedures must be prepared for each permit space in the park. These space-specific procedures provide the basis for training entry and rescue personnel, and they provide the conditions and requirements under which the entry supervisor determines whether an entry will be authorized. They must include the following information:

1. Space identification.

2. Classification as permit-required (indicate whether alternate entry method may be used) or non-permit space.

3. Reasons for entry.

4. Hazards.

5. Required surveillance and inspection.

6. Entry requirements.

7. Personal protective equipment requirements.

8. Rescue requirements.

Several examples of space-specific written plans are provided.

Example 1: Written Permit Space Program for Sewer Manholes

Space

COSP 001 Sewer Manhole, Maintenance Annex Facility
COSP 002 Sewer Manhole, Visitor's Center

Classification

Permit-Required Confined Space (Alternate entry methods may be used if criteria are met for Sewer Manhole.)

Reason for Entry

Cleaning and Maintenance

Hazards

a. Oxygen deficiency. (O2 deficient atmospheres were found in space COSP 001 (18%) during evaluation.)

b. Flammable atmosphere (methane). (Flammable atmosphere was detected in space COSP 002 – 10% LEL).

c. Toxic gas (hydrogen sulfide).

d. Biological hazards (communicable disease agents)

e. Restricted movement.

f. Drowning (standing water).

g. Falls (space COSP 002, approximately 20 feet).

h. Landfill leachates (space COSP is down gradient from landfill).

i. Ladders in disrepair or with poor design (spaces COSP 001 and COSP 002).

Surveillance and Inspection Requirements

a. Test atmosphere directly beneath cover for percent O2 and combustible gas (% LEL) prior to opening covers.

b. Test atmosphere with calibrated direct reading meter or instrument for:

- Percent oxygen content.
- Percent of the lower explosive limit.
- Hydrogen sulfide concentration (ppm, H_2S).

c. Inspect for sludge or other foreign material at the bottom or sides of the space that might give off flammable or toxic substances when disturbed by work activity. Floor of space must be visible.

d. Monitor atmosphere continuously in the vicinity of workers in the space.

e. All pumps and lines that may reasonably cause contaminants to flow into the space shall be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. Laterals to sewers or storm drains may not require blocking if experience or knowledge of use indicates there is not a reasonable potential for contamination of air or engulfment in the occupied sewer.

Entry

a. If no atmospheric hazards are present and visual inspections reveal no potential hazard, the space may be entered using alternate procedures as described.

b. If public has access, the area will be demarcated and a barrier erected to keep pedestrians from falling and to keep objects from falling into the space and injuring the entrant.

c. All electrical power sources will be isolated.

d. Do not use Freon for leak detection.

e. Use only explosion-proof electrical equipment and lighting. All electrical switching connections and disconnections must be made outside the space and away from the opening.

f. If atmospheric hazards are present, the space must be ventilated. Where possible, open additional manholes to increase air circulation. Use mechanical ventilation to augment natural circulation if needed. After ventilation, repeat testing and follow permit-required entry procedures.

Personal Protection and Protective Equipment

a. Protective clothing to prevent contact with raw sewage residues.

b. Coveralls.

c. Rubber or PVC boots and gloves. Ensure that boot soles and glove contact surfaces provide good traction and grip so that slips and falls are prevented.

d. Hard hat.

e. Ensure that individuals follow good hygiene practices and wash after entry is complete.

Rescue

a. Provide and secure ladder for entry and egress. Ladders fixed in place must be clear and in good repair.

b. Safety harness and lifeline required.

c. Tripod and winch to assist a non-entry rescue required.

Example 2: Written Permit Space Program for Sewage Lift Station Dry Wells

Space

COSP 003 Sewage Lift Station Dry Well, North Cape site
COSP 004 Sewage Lift Station Dry Well, South Beach

Classification

Permit-required confined space. Alternate entry methods may be used when criteria have been met.

Reasons for entry

Space COSP 003 is abandoned and secured. No entry is permitted.
Space COSP 004—Cleaning, maintenance, meter reading and logging.

Hazards

a. Oxygen deficiency.
b. Flammable atmosphere (methane).
c. Toxic gas (CO).
d. Falls.

Surveillance and Inspection

a. Test atmosphere with calibrated direct reading meter or instrument for:

    - Percent oxygen.
    - Percent of lower explosive limit.
    - Carbon monoxide.

b. Ensure that mechanical ventilation systems in dry well have been turned on and operating for at least five minutes prior to entry.

Entry

a. If no atmospheric hazards are present and visual inspection reveals no potential hazard, the space may be entered using alternate entry procedures.

b. Use integral restraint systems installed in dry well. Attach lifeline prior to stepping onto platform.

c. In locations where the general public is not restricted, the area will be demarcated and a barrier erected to keep pedestrians from falling and to keep objects from falling into the space and injuring the entrant.

d. Do not use Freon for leak detection.

Personal Protection and Protective Equipment

Ensure that soles and gloves that contact surfaces provide good traction and grip so that slips and falls are prevented.

Example 3: Written Permit Space Program for Steam Vaults

Spaces

COSP 005, Steam Vault, North Administration Building
COSP 006, Steam Vault, East Administration Building

Classification

Permit-required confined space.

Reasons for entry

a. Annual inspection.

b. Maintenance. Steam distribution system maintenance may include welding and cutting with acetylene torch, valve packing and pipe repair.

Hazards

a. Oxygen-deficient atmosphere.

b. Combustible gases or vapors (organic hydrocarbons, fuel vapors from adjacent fueling station in space COSP 005).

c. Toxic gases or vapors.

d. Introduced hazard during welding and cutting (O2 enrichment, acetylene, smoke and welding fumes).

e. Hot surfaces.

f. Live steam.

g. Combustible solids (litter in space COSP 005).

h. Asbestos pipe insulation (presumed asbestos material in space COSP05).

i. Ladders in disrepair.

Surveillance and Inspection

a. Test atmosphere with calibrated direct reading meter for:

    - Oxygen.
    - Flammable atmosphere.
    - Toxic gases and vapors appropriate to the task.

Note: Meters may be sensitive to high humidity within steam vaults resulting in high reading for some instruments.

b. Drop tests must performed. Test all locations and depths within the vault.

c. Inspect for sludge or other foreign material on the bottoms and sides of the space. These may give off flammable or toxic substances if disturbed by walking or heated by hot work.

d. Isolate steam prior to entry.

e. Continuously monitor atmosphere for oxygen content, LEL and toxic gases during hot work.

Ventilation

a. Provide continuous forced air ventilation to entrants during entry.

b. Provide local exhaust ventilation during hot work to remove smoke, gases and fumes produced.

Entry

a. Area will be demarcated and a barrier erected to keep pedestrians from falling and to keep objects from falling into the space and injuring the entrant.

b. Remove combustible materials such as litter and clean surfaces of oils or other combustible substances prior to hot work.

c. Compressed gas cylinders must not be taken into spaces. Inspect hoses, connections and torches of gas welding and cutting equipment prior to use.

Personal Protective Equipment

a. Hard hat.
b. Coveralls.
c. Steel-toed rubber boots.
d. Safety goggles or glasses.
e. Heat-protective gloves when appropriate.

Rescue

a. Provide ladder or other means to ensure easy and safe entry and egress.
b. Provide and use safety harness and lifeline.
c. Provide tripod and winch to assist in non-entry rescue.

Example 4: Written Permit Space Programs for Fuel Tanks

Spaces

COSP 007, Used Oil Tank, 3500 Gal, North Hill
COSP 008, Fuel Oil Tank, Maintenance Facility
COSP 009, Gasoline Tank, Maintenance Yard

Classification

Permit-required confined space.

Reasons for Entry

Cleaning and sludge removal.

Hazards

a. Oxygen-deficient atmosphere (oxidation processes).
b. Flammable vapors.
c. Toxic vapors (organic hydrocarbons).
d. Benzene (COSP 009).
e. Dermal exposure to hydrocarbons.

Surveillance and Inspections

a. Test atmosphere with calibrated, direct-reading, intrinsically safe meter for:

    - Oxygen content.
    - Percent of LEL.
    - Toxic vapors (petroleum hydrocarbons in spaces COSP 007 and 008; benzene in COSP 009).

b. Test at all locations and depths within the tank. Pay particular attention to areas where vapors may pocket such as sumps and baffled areas. Test through openings with a drop tube.

c. Continuously monitor atmosphere for oxygen content and percent LEL, and for toxic vapors every 15 minutes.

d. Monitor for % LEL (and benzene for space COSP 009) in the area surrounding the tank during purging.

Ventilation

a. Remove all ignition sources prior to purging.
b. Purge tank and maintain forced ventilation during entry.
c. Ensure ventilation equipment is properly bonded or grounded.
d. Vent vapors well away from tank. Ensure vapors do not collect in low spots.
e. Do not use steam to purge tank.

Entry

a. Post the following signs in the vicinity of the tank:

    - NO SMOKING
    - HARD-HAT AREA
    - NO OPEN FLAMES OR SPARK-PRODUCING EQUIPMENT BEYOND THIS POINT

b. Ensure all portable hand tools are explosion-proof and designed for hazardous atmospheres.

c. Ensure all portable electric equipment capable of generating static electricity is properly bonded or grounded if tank is non-metallic.

d. Have at least two B/C-rated fire extinguishers within easy access.

e. When possible, pass through portals near ground level (within three feet) rather than portals at the top of the tank.

Personal Protective Equipment

a. Hard hat.
b. Chemical protective coveralls.
c. Chemical protective boots.
d. Safety goggles.
e. Chemical protective gloves.

Rescue

a. Provide ladder or other means to ensure easy and safe entry and egress.
b. Provide and use safety harness and lifeline.
c. Provide tripod and winch to assist a non-entry rescue.

Appendix F: Alternate Entry Procedures

If it can be demonstrated that the only hazard posed by the permit space is an actual or potential hazardous atmosphere and that it can be controlled by continuous forced-air ventilation alone, then entry may be obtained using these alternate procedures.

1. Eliminate conditions making it unsafe to remove an entrance cover.

2. Guard opening to the space with a barrier to prevent accidental fall.

3. Post warning signs.

4. Test the atmosphere with calibrated, direct-reading instruments for

    a. Oxygen (must be between 19.5% and 23.5%).
    b. Flammability (must be less than 10% of the LEL).
    c. Potential toxic air contaminants.

    The lead worker who has completed training in the use of the gas-detection equipment used to conduct the testing must perform the testing.

    Note: Entry must not be authorized if a hazardous atmosphere exists.

5. Continuous forced-air ventilation shall be used as follows:

    a. No entry will be made until forced-air ventilation has eliminated any hazardous atmosphere.

    b. Ensure ventilation equipment is set up in an area that is clean and free from airborne contaminants.

    c. Ensure that the ventilation is directed toward the area where the entrant is working. Ventilation shall be provided for as long as the entrant is in the space. If ventilation is interrupted, entrants will immediately leave the space. Re-entry will be made only after ventilation is restored and the atmosphere has been retested and determined safe for re-entry.

6. Test the atmosphere periodically for O2, LEL and toxics. Follow any specific periodic monitoring instruction listed in space-specific guidelines.

7. If a hazardous atmosphere is detected during entry:

    a. Entrants must leave the space immediately.

    b. The space shall be evaluated to determine how the hazardous atmosphere developed.

    c. The hazards will be controlled prior to re-entry into the space.

8. No fewer than two authorized entrants will be on-site during confined space entry activities.

9. Supervisors will certify in writing that the above pre-entry measures have been taken. Certification will include the date, location of the space and signature of the supervisor serving as a responsible entry supervisor. The confined space entry permit may be used to document this certification.

Appendix G: Entry Permit

An entry permit must be prepared before any entry into a permit-required confined space is authorized. This permit verifies and documents that all pre-entry requirements have been completed. It must be signed by the Entry Supervisor.

The permit will be available to all authorized entrants and posted at the entrance to the space.

Permits will be valid for no longer than the time required to complete the task identified on the permit. Permits will be canceled when the covered entry operations have been completed or when a condition that is not allowed under the permit occurs in or near the space.

Permits must include the following information:

1. Space identification.
2. Purpose for entry.
3. Date and duration of the permit.
4. Names of authorized entrants.
5. Names of attendants.
6. Name of the entry supervisor.
7. The hazards that may be encountered.
8. Hazard control measures used (examples include lockout and tag-out, ventilation).
9. Acceptable entry conditions.
10. Results of initial and periodic testing.
11. Rescue and emergency services.
12. Communication procedures.
13. Required equipment.

An example permit is provided. You may wish to customize the permit to fit your particular space-specific requirements.

Confined Space Entry Permit

Date Expiration (time)

Space :	Reason for Entry

Attendants	Authorized Entrants
1)	1)
2)	2)
3)	3)
	4)

Hazards:

1 _____ 2 _____

3 _____ 4 _____

5 _____ 6 _____

HAZARD CONTROL MEASURE REQUIRED	COMPLETED
1	
2	
3	
4	
5	
6	

TESTING							
	Initial	Periodic					
Time							
% O2							
% LEL							
Specific toxic							
Specific toxic							

Rescue and Emergency Services

Communication Procedures

Required Equipment

Entry Supervisor_____ Signature _____

Hot Work Permits

When hot work is required within a confined space, the entry supervisor will ensure that the space is safe for hot work. The entry supervisor will coordinate with the Park Structural Fire Coordinator (PSFC) for approval to conduct hot work. The PSFC will issue a hot work permit in accordance with NPS RM 58. The hot work permit will be attached to the entry permit.

Appendix H: Employee Training Requirements

The following training requirements are the minimum and must be completed before authorized personnel are allowed to work around or in a confined space. Authorized personnel shall acquire the understanding, knowledge and skills necessary for the safe performance of their assigned duties. Personnel shall be trained as follows:

a. Before they are first assigned duties.
b. When there is a change in assigned duties.
c. When changes in operations present new hazards.
d. When inadequacies in knowledge and competencies are perceived.

Training must be documented.

Entry Supervisor

The entry supervisor will be trained in the duties and responsibilities of the entry supervisor (Appendix I), the authorized entrants, attendants and rescue personnel as well as in the requirements of this program, first aid, CPR and the specific hazards and entry requirements of each confined space.

Authorized Entrants

Authorized entrants will be trained in the duties and responsibilities of the entrant (Appendix I) and in the duties of the attendant and rescue persons, if they are required to perform those duties.

Attendants

Attendants will be trained in the duties and responsibilities of an attendant (see Appendix I).

Rescuers

Rescuers will be trained in the duties of a rescue person and entrant. Each rescuer will be trained in the proper use of personal protective equipment and rescue equipment, first aid and CPR. Initially, and once every 12 months, rescuers must practice making permit-space simulated rescues that involve removal of dummies or actual persons from representative spaces. Initial training must be provided prior to allowing personnel to perform rescues.

Appendix I: Attendant, Entrant and Entry Supervisor Duties and Responsibilities

Entry Supervisor

The entry supervisor shall:

1. Know the hazards that may be faced during entry, and know the signs, symptoms, modes and consequences of exposure.

2. Verify, by checking, that the entry permit has been completed properly, that all required tests have been performed and recorded on the permit, and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

3. Terminate the entry and cancel the permit when prohibited conditions arise and the safe condition in the space has changed.

4. Verify that rescue services are available and that the means for summoning them are operable.

5. Designate individuals authorized to enter the permit space. Prevent unauthorized individuals from entering the space.

6. Monitor the conditions in and around the confined space and ensure operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.

7. Determine the number or attendants needed and the requirements for rescue persons, teams and resources.

Authorized Entrant

The authorized entrant shall:

1. Know the hazards that may be faced during confined space entry and work.

2. Know how to properly use all supplied equipment for work, entry and exit.

3. Communicate with the attendant as necessary to enable the attendant to monitor entrant's status.

4. Alert the attendant when warning signs and symptoms of exposure are recog-nized and when prohibited conditions are detected.

5. Know how to exit the permit space quickly.

6. Recognize the designated evacuation alarm.

Attendant

The assigned attendant shall:

1. Know the hazards that may be faced during entry, including information of the mode, signs and symptoms, and consequences of exposure to the hazards.

2. Be aware of possible behavioral effects of hazard exposure in authorized entrants.

3. Continuously maintain an accurate count of authorized entrants in the permit space.

4. Remain outside the permit space until all entrants have exited the permit space or until relieved during entry operations.

5. Maintain communication with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the permit space.

6. Monitor activities inside and outside the permit space to determine if it is safe for entrants to remain in the space. Order evacuation if the following conditions occur:

    a. Attendant detects prohibited conditions.
    b. Attendant detects behavioral effects of hazard exposure in entrants.
    c. Attendant detects a situation outside the space that could endanger the entrants.
    d. Attendant cannot effectively and safely perform all of his or her duties.

7. Summon rescuer and other emergency services as soon as it is determined that authorized entrants may need assistance to escape from permit space hazards.

8. Warn unauthorized personnel that they are not allowed to enter the permit space.

9. Perform non-entry rescue.

10. Perform no other duties that may interfere with the attendant's primary duty to monitor and protect the entrants.

Rescuer

Rescue personnel shall:

1. Ensure rescue and personal protective equipment is available and functional.

2. Ensure that training requirements have been met for all team members.

3. Know the hazards associated with the space, which might be encountered during a rescue prior to entry.

National Park Service Lockout/Tagout Policy

This standard helps safeguard employees from hazardous energy while they are performing service or maintenance on machines and equipment. The standard identifies the practices and procedures necessary to shut down and lockout or tagout machines and equipment, requires that employees receive training in their roles in the lockout/tagout program and mandates that periodic inspections be conducted to maintain or enhance the energy control program.

The standard requires employers to establish procedures for isolating machines or equipment from the input of energy and affixing appropriate locks or tags to energy-isolating devices to prevent any unexpected energization, start-up or release of stored energy that would injure workers. When tags are used on energy-isolating devices capable of being locked out, the employer must provide additional means to assure a level of protection equivalent to that of locks. The standard also requires the training of employees and periodic inspections of the procedures to maintain or improve their effectiveness.

This rule requires that, in general, before service or maintenance is performed on machinery or equipment, it must be turned off and disconnected from the energy source and the energy-isolating device must be either locked or tagged out. OSHA estimates that adherence to the requirements of this standard can eliminate nearly two percent of all workplace deaths in establishments affected by this rule and can have a significant impact on worker safety and health in the United States.

Scope

The lockout/tagout standard applies to NPS work environments, and covers the servicing and maintenance of machines and equipment in which the unexpected start-up or the release of stored energy could cause injury to employees. (If employees are performing service or maintenance tasks that do not expose them to the unexpected release of hazardous energy, the standard does not apply.) This program applies to all employees and volunteers of the National Park Service who use lockout/tagout in the course of their duties.

The standard establishes minimum performance requirements for the control of hazardous energy.

The standard does not apply in the following situations:

- While servicing or maintaining cord and plug connected electrical equipment. (The hazards must be controlled by unplugging the equipment from the energy source; the plug must be under the exclusive control of the employee performing the service and/or maintenance.)