

Headquarters Safety, Health and Environmental Procedures		NUMBER: 2010-001
SUBJECT: Confined Space Entry Program for Department of Energy (DOE) Headquarters		Office of Administration, Headquarters Safety, Health and Security
Subject Matter Expert: Brian S. Stewart		Effective Date: January 4, 2010

A. PURPOSE:

The purpose of this program is to provide specific procedures and safe work practices for employees and/or contractors required to enter confined spaces at Department of Energy (DOE) Headquarters (HQ). These procedures and practices are designed to:

1. Comply with state and federal regulations regarding confined spaces.
2. Identify and label all permit required and non-permit required confined spaces at DOE HQ facilities.
3. Limit the number of confined space entries.
4. Identify, evaluate, and eliminate potential hazards within the confined spaces prior to entry.
5. Establish and implement a permit system for entry into confined spaces.
6. Ensure that employees who may work in confined spaces are trained on proper procedures and entry techniques.

B. SCOPE:

The scope of this procedure applies to DOE and NNSA Federal and/or contractor employees performing work in the DOE Forrestal and Germantown Complexes. These procedures shall also be used when DOE is performing work in Headquarters leased facilities where the Property Manager does not have established procedures. Contractors will comply with these procedures unless they have an approved safety and health plan, submitted and approved in advance of performing work and in accordance with Title 10, CFR Part 851, and the plan includes more stringent confined space procedures than those described within this document.

C. AUTHORITY:

This guidance is issued in accordance with 29 CFR 1960.8(c) and the Delegation of Authority from GSA to DOE for the operation and management of the Forrestal and Germantown Facilities.

D. REGULATIONS/REFERENCES:

Regulations/references pertaining to the Confined Spaces Program are found in:

1. Title 29, Code of Federal Regulations Part 1910.146 – Occupational Safety and Health Administration (OSHA) General Industry Standard - Permit-Required Confined Spaces
2. Title 29, Code of Federal Regulations Part 1910.150 – OSHA General Industry Standard - The Control of Hazardous Energy
3. Title 29, Code of Federal Regulations Part 1926.21 - OSHA Construction Standard - Confine Space Program
4. Title 29, Code of Federal Regulations Part 1960 – Basic Program Elements for Federal Employee Occupational Safety and Health Programs
5. Title 10, Code of Federal Regulation Part 851 - DOE Worker Safety Health Program
6. Executive Order 12196, issued February 26, 1980
7. U.S. Department of Health and Human Services (DHHS) National Institution of Safety and Health (NIOSH) Publication 87-113 July 1987, A Guide to Safety in Confined Spaces
8. OSHA Publication 3138-01R, Permit-Required Confined Spaces, dated 2004
9. National Safety Council (NSC): Confined Space Entry Program. Basic information about testing and entering confined spaces. Product #14543-2222

E. DEFINITIONS:

See Appendix A for definitions

F. RESPONSIBILITIES:

A variety of organizations and individuals have responsibilities for implementing and managing the Confined Space Entry Program. The success of the program depends on the effective communication and coordination of these affected organizations and

individuals. This section identifies the responsibilities for the various affected organizations and individuals.

1. **Director, HQ Safety, Health and Security Office (MA-41):** The director serves as the point-of-contact for issues concerning the DOE HQ Confined Space Program. The Director is responsible for:
 - a. Establishing this written Confined Space Program
 - b. Developing, implementing and providing oversight of the Confined Space Program
 - c. Evaluating and classifying confined spaces at DOE Headquarters
 - d. Reviewing and updating the Confined Space Program, including entry operations and procedures:
 - At least annually, using the canceled permits;
 - If there is reason to believe that the measures taken under the Forrestal and Germantown Complex's Confined Space Entry Program may not provide affected employees with the necessary protection; or,
 - To correct any deficiencies found to exist under the prior entry operations and procedures.
2. **Building Managers:** Building Managers are responsible for:
 - a. Identifying confined space locations and ensuring that a classification of each identified confined space is performed.
 - b. Ensuring that confined spaces and permit-required confined spaces are properly labeled.
 - c. Ensuring that contractors and subcontractors working in DOE HQ buildings have been notified of the presence of confined spaces within their work area.
 - d. Identifying workers who may be expected to enter confined spaces.
 - e. Reviewing and approving permits prior to entry.
 - f. Providing copies of the permit and applicable training certificates to the Director of HQ Safety, Health and Security for review and file.
 - g. Ensuring, when applicable, that a Site Specific Plan has been submitted, reviewed and approved in accordance with Title 10 CFR Part 851 when a contractor is performing confined space entry.

3. ***Heads of Headquarters Program Elements:*** Heads of Headquarters Program Elements are responsible to ensure that contractors working for them comply with these requirements, are aware of the location and hazards associated with confined spaces, and complete a permit prior to working in a confined space.
4. ***Entry Supervisors (Competent Person):*** Confined space entry supervisors are responsible for implementing the Confined Space Entry Program at the site and for the safety of the entrants. Specifically, entry supervisors are responsible for:
 - a. Ensuring that work is planned and coordinated prior to entry.
 - b. Assessing the hazards faced during entry, including gathering information on the mode, signs or symptoms, and consequences of potential exposures.
 - c. Determining whether a permit is required based on the nature of the work to be performed and the hazards that may be faced during entry.
 - d. Determining if acceptable entry conditions are present within the confined space where entry is planned.
 - e. Ensuring that the required atmospheric testing is performed within the confined space and that results are recorded on the permit prior to entry. Including:
 - Ensuring that a field calibration of the monitoring instrument is conducted in accordance with manufacturer requirements.
 - Ensuring that the monitoring instrument has a manufacturer's (or authorized calibration entity's) dated calibration sticker. The calibration must have been completed within one year of the date of the testing for the calibration to be considered valid.
 - f. For permit-required entry, informing the Central Alarm System (CAS) before and after entry.
 - g. Before signing the permit and allowing entry to begin, verifying the appropriate information has been provided on the permit, that all employees meet the training requirements, that all tests specified by the permit have been conducted, and that all procedures and equipment specified by the permit are in place.
 - h. Supervising the entry operations and denying entry to unauthorized individuals who attempt to enter the space.
 - i. Terminating entry and canceling the permit at the conclusion of work. If work has been stopped, terminate entry, reevaluated conditions and permit.

5. ***Authorized Confined Space Entrants:*** Confined space entrants are responsible for knowing and understanding the hazards associated with confined space entry and the procedures for performing the work safely. Specifically, entrants are responsible for:
 - a. Working in and around the confined spaces according to guidelines and work practices established by this document.
 - b. Understanding the hazards faced during entry, including information on the mode, signs or symptoms, and consequences of the exposures.
 - c. Notifying Entry Supervisors and co-workers of any unsafe condition prior to entry or while working in the confined space.
 - d. Discontinuing work if a hazard is identified while working in the confined space until hazard has been abated.
6. ***Confined Space Attendants:*** Confined space attendants are responsible for the safety of all entrants, controlling access into the confined space, and summoning emergency rescue assistance when needed. Specifically, attendants are responsible for:
 - a. Knowing the potential hazards associated with the confined space and activity to be performed, including information on the mode, signs or symptoms, and consequences and behavioral effects of exposure.
 - b. Maintaining an accurate account of confined space entrants (who and number) in the confined space.
 - c. Remaining at the confined space attendant's post and not leaving for any reason other than self-preservation or when replaced by an equally qualified individual who is familiar with the scope and nature of the work.
 - d. Maintaining continuous communication with all entrants within the confined space.
 - e. Preventing unauthorized individuals from entering the confined space.
 - f. Knowing emergency procedures and having the means to summon immediate emergency assistance, if needed.
 - g. Order entrants to exit the confined space at the first indication of a non-permitted condition, an unexpected hazard, or if a situation occurs outside the space that could pose a hazard to the entrants.
 - h. In the event of an emergency requiring rescue, immediately notify the CAS to notify the fire department that rescue assistance is needed; remain outside the

confined space. Attempt rescue from outside the confined space by using a lifeline, if possible. Under no circumstances shall the attendant enter the confined space to attempt rescue.

7. ***Contractors or Contract Employees:*** Any contractor or subcontractor working in or around confined space on a DOE Headquarters Complex shall:
 - a. Ensure that all employees are aware of and follow these procedures when performing work in or around a confined space. Contractors are responsible for their sub-contractors.
 - b. Submit a permit request to the Facility Manager and the DOE HQ Safety, Health and Security office for permit required confined space entry.
 - c. Submit copies of their firm's Safety and Health Plan and/or Confined Space Entry Plan to DOE HQ Safety, Health and Security Office in accordance with 10 CFR 851 for review and approval two weeks prior to beginning work. A plan that has been submitted, reviewed and approved within the previous year will be reviewed to ensure that the components of confined space entry are covered.
 - d. Submit copies of training documents and/or certifications to HQ Safety, Health and Security Office. These documents may be included with the Safety and Health Plan and do not need to be resubmitted if they will be current (no longer than one year old) at the date of entry.
 - e. Maintain records in accordance with OSHA confined space and recordkeeping requirements.
 - f. Notify DOE HQ Safety, Health, and Security Office if inspected by OSHA, EPA, or other Federal, state, or local agent.
8. ***DOE Contracting Officers and Contracting Officer's Representatives:*** For work involving access to confined spaces, the DOE contracting office shall ensure that contracts involving confined space entry contain language requiring the contractor to meet the confined space program and training requirements of 29 CFR 1910.146.

G. TRAINING:

The DOE HQ Safety, Health and Security Office will provide information on the location and known hazards associated with confined spaces. Contractors are responsible to ensure that their employees are trained to perform work in or around confined spaces and are trained for the other hazards associated with the confined space to be entered or the work to be performed. Confined space training will establish employee proficiency in the duties required by the confined space standard.

1. **Frequency:** Confined Space Entrants, Attendants and Entry Supervisors shall receive confined space entry training, at a minimum:
 - a. Prior to any confined space entry;
 - b. When there is a change in assigned duties which requires access to, or work in close proximity to a confined space;
 - c. When a change in permit space operations creates or is likely to create a new hazard;
 - d. Whenever an employee deviates from established procedure;
 - e. When inadequacies in an employee's knowledge are identified; and,
 - f. As directed by the Director of the DOE HQ Safety, Health and Security Office.
2. **Contents:** Confined space entry training shall include, but shall not be limited to:
 - a. Confined space identification and differentiation between permit required and non-permit required confined spaces.
 - b. Identification and evaluation of permit space hazards
 - c. Proper handling and operation of air testing equipment
 - d. Safe entry techniques (includes, but is not limited to ladder safety, wench and harness techniques, etc.)
 - e. Attendant and entrant responsibilities
 - f. Communication techniques
 - g. Rescue procedures
 - h. Ventilation techniques
 - i. Supervisory responsibilities
 - j. Permit completion/cancellation techniques
 - k. Location of permit spaces

Detailed confined space entry procedures are outlined in Appendix B of this SOP.

H. INVENTORY:

For DOE Forrestal and Germantown Complexes, all identified confined space locations and their classifications are listed in Appendix C. This list shall be updated if a confined space is identified, discovered, or reclassified.

Mechanical equipment rooms and electrical vaults, although they may only have one door for access/egress and may contain other potential hazards, are not considered confined spaces because they were designed for an employee to access the room to perform work. Exceptions to this include rooms that require access through a small opening or port, crawl spaces, or rooms which have sloping floors, ceilings, or walls.

I. CLASSIFICATION OF CONFINED SPACES:

The confined space assessment form in Appendix D shall be used to identify and classify each confined space. The original assessment forms shall be maintained by the Director, Headquarters Safety, Health and Security, with copies maintained by the Facility Manager for easy reference.

Confined spaces shall be classified into two categories: non-permit required confined spaces and permit-required confined spaces. Permit-required confined spaces are those locations that contain or have the potential to contain a physical or chemical hazard. Confined spaces that also have the potential to entrap an occupant such as with loose dirt or water are also considered permit-required confined spaces. Non-permit required confined spaces have limited access or egress, but do not possess the additional hazards.

J. RECLASSIFICATION OF PERMIT REQUIRED CONFINED SPACES:

When **the known hazards of a confined space have been eliminated** either temporarily or permanently, the permit-required confined space may be **reclassified** to a “non-permit” confined space.

1. ***Permanent Reclassification:*** The confined space assessment form in Appendix D shall be used to permanently reclassify confined spaces. When a permit required confined space is to be **reclassified** to a permanent “non-permit” status, the Director of HQ Safety, Health and Security or designated representative will issue a written certification that contains the date, the location of the space and the signature of the person making the determination that **known and potential hazards have been permanently eliminated**. The documentation must describe what actions were taken to permanently eliminate the hazards.
2. ***Temporary Reclassification:*** The confined space entry permit may be used to temporarily reclassify confined spaces for entry purposes. If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit required confined space for as long as the hazards

remain eliminated. Documentation for the reclassification must describe what actions were taken to temporarily eliminate the hazards and the reclassification must be signed by the Entry Supervisor. Use of personal protective equipment does not constitute an allowable reason to temporarily reclassify a space. If any hazard or potential hazard remains, the confined space cannot be reclassified to a non-permit confined space. The temporary reclassification certification shall be made available to each employee entering the space and, if requested, to that employee's authorized representative. This documentation must be completed each time a permit-required confined space is reclassified, and remains in effect only as long as all of the hazards remain eliminated. If hazards arise within a permit space that has been reclassified to a non-permit space, each entrant must immediately exit the space. The Entry Supervisor shall then reevaluate the space and determine whether it must be reclassified as a permit space. For temporary reclassifications, the classification automatically reverts to permit-required confined space at the termination of the work, the end of the work day, and/or the cancellation of the permit, whichever occurs first.

K. SIGNAGE:

Signs are required to be posted and maintained on or near the opening of all permit-required confined spaces, except those that are protected by a heavy manhole cover, locked entry cover or panel, or an access door that can only be opened with special tools. The sign serves as a warning to workers and to prevent unauthorized entry into the confined space. The warning sign shall contain, at a minimum, the following information:

DANGER!
PERMIT-REQUIRED CONFINED SPACE
DO NOT ENTER!

If posting danger signs cannot be used to inform the potentially exposed employees, use any other effective means to warn of the existence, location, and the danger posed by the permit spaces.

L. ENTRY PERMIT REQUIREMENTS/RESPONSIBILITIES:

A confined space entry permit is required for entry into any confined space. The confined space entry permit is located in Appendix E.

1. *Required signatures:*

- For permit-required confined spaces, permits must be signed by the Entry Supervisor, the DOE Building Manager and the Director, Headquarters Safety, Health and Security
- Where confined spaces do not require permits (i.e., they do not and are not likely to contain hazards), or where the confined space has been temporarily

reclassified to a non-permit confined space, the Entry Supervisor must sign the permit.

2. **Duration:** The duration of entry permits must not exceed the time required to complete an assignment. An entry permit shall be used for each continuous operation performed within a confined space and shall not exceed one day.
3. **Permit Contents:** Permit must verify that pre-entry preparations outlined in this standard have been completed. At a minimum, confined space entry permits must include:
 - Name of permit space to be entered
 - Known hazards within the confined space
 - Purpose of entry
 - Measures to be taken to isolate permit spaces and to eliminate or control space hazards
 - Acceptable entry conditions
 - Test results
 - Tester's signature
 - Name of authorized Entrant(s), eligible Attendants, and Entry Supervisors
 - Communication procedures and equipment to maintain contact during entry
 - Additional permits, such as for hot work, that have been issued authorizing work in the permit space
 - Special equipment and procedures, including personal protective equipment and alarm systems
 - Any other information needed to ensure employee safety
 - Name and telephone number(s) of rescue and/or emergency services
 - Procedures to be used to contact emergency services
 - Name and signature of Entry Supervisor who authorizes entry
 - Date and authorized duration of entry
4. The Entry Supervisor shall complete the entry permit in Appendix E and make available to all supervisors, entrants, attendants, authorized employee representatives, and rescue personnel. The permit must remain in the immediate area of the confined space entry, maintained by the Entry Attendant and remain with the Entry Attendant for the duration of the authorized entry. Changes of personnel (supervisors, attendants, entrants, etc.), testing and monitoring data shall be documented on the permit.
5. **Number of Attendants:** Authorized entry is not permitted, unless there is **at least one** attendant stationed immediately outside each permit-required confined space to be entered.
6. **Cancellation:** Cancellation of Confined Space Entry Permits:
 - The Entry Supervisor must cancel entry permits when an assignment is completed or when new conditions exist. New conditions must be noted

- on the canceled permit.
- Entry Supervisor shall maintain a copy of the cancelled permit for at least a period of one year.
- At the end of the authorized entry the Entry Supervisor shall cancel the permit and provide a copy of the cancelled permit to HQ Safety Health and Security Office.

M. CONFINED SPACE EQUIPMENT:

The Entry Supervisors shall ensure confined space equipment is provided, and properly maintained, at no cost to the employee. Employees required to work (in or around) confined spaces will properly use the following equipment:

1. Testing and monitoring equipment
2. Ventilation equipment
3. Communication equipment
4. Personal protective equipment
5. Lighting equipment
6. Barriers and shields
7. Rescue and emergency equipment
8. Entry and egress equipment

N. HARNESSES AND RETRIEVAL LINES:

Authorized Entrants who enter a permit-required confined space or who enter any manhole deeper than five feet must wear a chest or full body harness with a retrieval line attached to the center of their backs near shoulder level or above their heads. The other end of the retrieval line must be attached to a mechanical device or a fixed point outside the confined space.

O. MATERIAL SAFETY DATA SHEETS (MSDS):

A Material Safety Data Sheet (MSDS) must be obtained and submitted with the confined space entry permit for any chemical which will be used inside a confined space and for any chemical expected and located within the confine space, whether or not an exposure is expected. The MSDS shall be maintained with the permit and made available to the emergency response personnel and/or medical facility personnel treating the exposed entrant.


P. RESCUE PROCEDURES:

The National Institute of Occupational Safety and Health (NIOSH) estimates that over 50 percent of fatalities in confined spaces result from workers attempting to rescue other workers. For this reason, any rescue should be planned in advance, and attempted by a team of individuals who have trained for and practiced rescue drills of injured or downed persons from a confined space.

1. **Rescue Plan:** The Entry Supervisor shall provide a rescue plan for each permit-required confined space if different from the rescue procedures outlined in Appendix F. The rescue plan will specify methods that do not involve entry by DOE workers or contractors into the confined space. Attendants and the Entry Supervisors are responsible for preventing unauthorized persons in attempting a rescue inside the confined space.
2. **Rescue Service Personnel:** The local Fire Department will be used for rescue of personnel within a confined space. Assistance and information shall be provided, as needed, to the responding Fire Department in the event of an actual rescue emergency.

Approved:

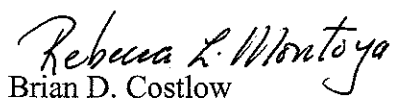
Date: 1/4/2010


Cherylynn K. Williams

Director, Headquarters Safety, Health and
Security Office

Approved:

Date:


for Brian D. Costlow

1/4/2010

Director, Office of Administration
Headquarters Safety and Health Official

APPENDIX A

DEFINITIONS

Attendant: A trained individual stationed outside a permit required confined space who monitors the authorized entrants and performs attendant duties as outlined in this procedure.

Confined Space: A space that meets ALL THREE of the following conditions:

- Is not designed for continuous employee occupancy
- 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).
- Is large enough and so configured that an employee can bodily enter and perform assigned work

Engulfment: The surrounding, capturing, or both, of a person by divided particulate matter or liquid.

Entry: Ingress by persons into a confined space that occurs upon breaking the plane of the confined space portal with any part of his/her body; periods of time which the confined space is occupied.

Entry Permit: A written permit issued by a designated confined space entry supervisor, that authorizes entry into a permit required confined space. Entry shall not be allowed into a confined space without this written permit.

Entry Supervisor: An employee designated in writing and properly trained as outlined in this procedure that is responsible for determining if acceptable entry conditions are present at a permit space where entry is planned. They are also responsible for authorizing entry (issuing the entry permit), overseeing entry operations, and terminating the entry as required by this procedure.

Hazardous Atmosphere: An atmosphere that may be, or is, injurious to occupants from one or more of the following:

- A flammable gas, vapor, or mist in excess of 10% of its Lower Explosive Limit (LEL), also known as its Lower Flammable Limit (LFL).
- An airborne combustible dust at a concentration that meets or exceeds its Lower Flammable Limit (LFL). If dust obscures vision to a distance of five feet or less it will be assumed to exceed its LFL.
- An atmospheric oxygen concentration below 19.5% or above 23.5% by volume, as determined by atmospheric testing
- An atmospheric concentration of any substance for which a permissible exposure limit (PEL) is published by a regulatory agency, and could result in employee exposure in excess of its permissible limit. If the substance is not listed or published, the American Conference of Government Industrial Hygienists

(ACGIH) Threshold Limit Values (TLV) or the Material Safety Data Sheet (MSDS) can be referenced for recommendations.

- Any atmospheric condition recognized as Immediately Dangerous to Life or Health (IDLH).

Hot Work: Work within a confined space that produces arcs, sparks, flames, heat, or other sources of ignition.

Hot Work Permit: A written authorization, issued by an authorized agency or individual, to perform operations capable of providing a source of ignition.

Immediately Dangerous to Life and Health (IDLH): Any condition that poses an immediate threat of loss of life; may result in irreversible or immediate-severe health effects; may result in eye damage, irritation, or other conditions that could impair escape from the confined space.

Immediate-Severe Health Effects: Any acute clinical sign of a serious, exposure-related reaction manifested within 72 hours after exposure.

Isolation: A process of physically interrupting, or disconnecting, or both, pipes, lines, and ALL energy sources from the confined space.

LEL/LFL and UEL/UFL: Acronyms for Lower Explosive Limit/Lower Flammable Limit and Upper Explosive Limit/Upper Flammable Limit.

Non-Permit Required 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.

Oxygen Deficient Atmosphere: An atmosphere containing less than 19.5% oxygen by volume.

PEL: An acronym for Permissible Exposure Limit which is the allowable air contaminant level adopted by DOE based on published and mandated exposure limits.

Permit-Required Confined Space: A confined space that has at least one of the following characteristics:

- Contains, or has the potential to contain, a hazardous atmosphere
- Contains a material that has the potential for engulfment
- Has an internal configuration that could trap or asphyxiate an entrant such as, inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section
- Any other recognized serious safety or health hazard

Rescue Service: Personnel designated to rescue employees from permit required confined spaces.

TLV: An acronym for Threshold Limit Value. TLVs are recommended allowable air contaminant levels published by the American Conference of Governmental industrial hygienists (ACGIH).

Unauthorized Entry: Entry of a confined space by a person other than an authorized Entrant.

APPENDIX B

Confined Space Entry Procedures

The following list identifies the minimal means, procedures, and practices necessary for safe confined space entry operations. These procedures shall be documented on the Confined Space Entry Permit located in Appendix E.

At initiation of work assignment:

1. Identify and review confined space hazards associated with the space to be entered.
2. Review the work to be completed. Determine whether the work can be completed without entry into the confined space. If work can be completed without entry, do so.
3. Control hazards and document any temporary reclassification of the confined space. Control of hazards includes isolation, lock-out, or tag-out of physical or mechanical hazards and the active ventilation of the space.
4. Plan the work. Identify potential hazards associated with the work, identify any personal protective equipment required, identify additional coordination or other work permits (e.g., asbestos, hot work, etc.) may be required.
5. Specify acceptable entry conditions.
6. Identify emergency procedures to be used.
7. Identify means of communication to be used.
8. Identify Entrants, Attendants, and Entry Supervisor. Ensure that all have been trained in confined space entry procedures.
9. Complete Entry Permit. Obtain approvals.

Prior to Entry:

1. Re-evaluate hazards, entry conditions, work to be performed, specified entry conditions, emergency procedures, and weather. Identify any new or emerging hazards.
2. Provide barriers and place warning signs to confined spaces that protect entrants from hazards created by pedestrians, vehicles, or other external interferences.

3. Place all tools, safety equipment, monitoring equipment, etc. near the confined space.
4. Ensure that reclassification criteria have been met.
 - a. Isolate all mechanical and/or electrical hazards as necessary.
 - b. Purge, inert, flush, or ventilate the permit space as necessary to eliminate or control atmospheric hazards.
 - c. Verify that conditions within the permit space are acceptable throughout the duration of the authorized entry.
5. Test conditions of the confined space prior to any authorized entry. If continuous atmospheric conditions cannot be maintained in the space (due to large size, or portion of continuous system), conduct pre-entry testing as is feasible without entering the space and maintain continuous monitoring of the areas occupied by authorized entrants.
6. Field calibrate equipment and monitor air within the confined space, being careful to check at multiple levels and different time intervals. At a minimum, and in the order specified, monitor for:
 - a. Oxygen concentration (levels must be between 19.5% and 23.5% by volume)
 - b. Combustible gases and/or vapors (concentration must be below 10% of the LEL/LFL)
 - c. Toxic gases and/or vapors
7. Allow authorized entrants or employee authorized representative to observe monitoring and testing.
8. Ensure that necessary retrieval devices are in place.
9. Notify CAS of confined space entry.
10. Authorized Entrants and Attendants shall review and initial permit.
11. Re-evaluate the permit space if authorized Entrant or the employee's authorized representative feel that the evaluation of the permit space was inadequate.
12. Allow entry.

During Entry:

1. Maintain permit at confined space.
2. Ensure that Attendant remains at entrance to confined space while Entrant(s) is in

the confined space and while the opening remains accessible.

3. Verify that conditions remain acceptable.
4. Do not allow any person other than authorized Entrant(s) to enter confined space.
5. Maintain communications.
6. Discontinue work if hazard arises or if work cannot be fulfilled as planned.
7. Document any changed condition on the permit.

Post Entry:

1. Cancel the permit(s) and secure the confined space to eliminate unauthorized entry.
2. Notify CAS that confined space entry work has concluded and that the confined space has been secured.
3. Review work and entry operations and procedures. Document any problems, changes, or suggested changes.
4. Make copy of permit and any monitoring data for Building Manager and for company records. Submit original to HQ Safety, Health, and Security Office.

APPENDIX C

DOE Headquarters Confined Spaces

Complex	Description	Location(s)	Known Potential Hazards
FORS	Manhole for water fountain	South Building Courtyard	Limited Access/ Exit Electrical, Hazardous Atmosphere
FORS	Manhole outside CDC	On east side of CDC playground	Limited Access/ Exit Electrical, Hazardous Atmosphere
FORS	Electrical Manhole -		Limited Access/ Exit Electrical, Hazardous Atmosphere
FORS	Telephone Manhole -		Limited Access/ Exit Electrical, Hazardous Atmosphere
FORS	Diesel Tank		Limited Access/ Exit Hazardous Atmosphere
FORS	Air Intake Chambers		Limited Access/ Exit
FORS CDC	FORS CDC Crawl Space		Limited Access/ Exit
FORS	Steam Room		Limited Access/ Exit
FORS	Steam Tunnels		Limited Access/ Exit
FORS	Access to fan side of Air Handling Units	Mechanical Equipment Rooms	Limited Access/Exit Fan Blade Hazard
GTN	Electrical Manholes		Limited Access/ Exit Electrical – High & Low Voltage Hazardous Atmosphere
GTN	Telephone Manholes		Limited Access/ Exit Hazardous Atmosphere
GTN	Boilers		Limited Access/ Exit Hazardous Atmosphere Temperature
GTN	Water Tower		Limited Access/ Exit Hazardous Atmosphere
GTN	Diesel Tanks		Limited Access/ Exit Hazardous Atmosphere
GTN	Old Air Chamber Tunnels/Crawl Sp.		Limited Access/ Exit
GTN	Return Air Shafts (Blast Dampers)		Limited Access/ Exit
GTN CDC	GTN CDC Crawl Space		Limited Access/ Exit
GTN Auditorium	Crawl Space below auditorium		Limited Access/ Exit
GTN	Access to fan side of Air Handling Units	Mechanical Equipment Rooms	Limited Access/Exit Fan Blade Hazard
GTN	Generator Room		Sloping floor Limited Access/Egress

APPENDIX D

CONFINED SPACE ASSESSMENT FORM

Identification	Confined Space #	Building	Purpose for Assessment																																																													
	Description of Confined Space	Location	<input type="checkbox"/> Initial Assessment <input type="checkbox"/> Temporary Reassessment <input type="checkbox"/> Permanent Reassessment																																																													
Classification	Is the Area a Confined Space? 1. Was the area designed for continual worker occupancy? 2. Does the area have normal access or egress? 3. Can a person easily enter and perform work?		<div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes </div> <div> <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No </div> </div> <p><i>If any answer is no, area meets the definition of a confined space.</i></p>																																																													
	Does the Confined Space Require a Permit? 1. Does the area have a fluid or solid that may engulf a worker? <i>Examples include water, loose soil, steam, grains</i> 2. Do the walls slope inward such that one side is narrower than another? 3. Does the floor or ceiling slope such that one side is taller than the other? 4. Does the area contain electrical hazards (High Voltage) hazard? 5. Does the area contain moving mechanical parts? 6. Does the area contain thermal hazards (hot or cold)? 7. Does the area have a burn hazard? 8. Does the area contain noise levels over 85 dBA? 9. Does the area contain gas lines? 10. Does the area have raw sewage? 11. Is there known asbestos in the area? 12. Is there mold growth in the area? 13. Is there an oxygen deficient atmosphere? 14. Does the area contain any other hazard? Specify:		<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;"></th> <th style="width: 33%; text-align: center;">Yes</th> <th style="width: 33%; text-align: center;">Potential</th> <th style="width: 33%; text-align: center;">No</th> </tr> </thead> <tbody> <tr><td>1. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>2. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>3. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>4. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>5. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>6. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>7. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>8. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>9. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>10. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>11. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>12. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>13. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>14. <input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> </tbody> </table> <p><i>If any answer is yes, area meets the definition of a permit-required confined space.</i></p>				Yes	Potential	No	1. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Reclassification	Actions taken to mitigate engulfment hazard																																																															
	Actions taken to hazards associated with physical space, dimensions, access, or egress																																																															
	Actions taken to eliminate electrical hazard																																																															
	Actions taken to eliminate other physical hazards (moving parts, noise, thermal)																																																															
	Actions taken to eliminate hazardous atmosphere																																																															
	Other actions taken																																																															
Name of Evaluator:		Signature		Date of Assessment																																																												

Appendix E

DOE Headquarters Confined Space Permit

To be completed when going into a Confined Space on DOE Headquarters property. A separate permit is required for each confined space and for each day of entry.

Permit Information	Permit Number:		Requestor:		DOE Sponsor	
	Date of Request		Requestor's Phone Number		Sponsor's Phone	
			Requestor's Organization/Company		Sponsor's Org	
Confined Space Info	Confined Space Number		Location		Classification	
	Existing Hazards					
Initial Assessment	Reason for Entry					
	Type of work to be done					
	Can work be done without entering confined space? <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Have conditions changed from date of last assessment? <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Are there additional hazard associated with the work? <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Does an SOP exist for this type of work at this location? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Temporary Reclassification	Is this work routine? <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Is this work emergency work? <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Hazard			Mitigation		
	<input type="checkbox"/> Engulfment hazard					
	<input type="checkbox"/> Hazards associated with physical space, dimensions, access, or egress					
	<input type="checkbox"/> Electrical hazard			<input type="checkbox"/> Lock out <input type="checkbox"/> Other (specify) <input type="checkbox"/> Tag out		
	<input type="checkbox"/> Physical hazards (moving parts, noise, thermal)			<input type="checkbox"/> Lock out <input type="checkbox"/> Other (specify) <input type="checkbox"/> Tag out		
	<input type="checkbox"/> Hazardous atmosphere			<input type="checkbox"/> Positive Ventilation		
	<input type="checkbox"/> Other Hazards (specify)					
						Temporary New Classification
Date Reclassification		Name of Re-classifier		Signature of Re-classifier		

	Permit Number	Date	Page 2
Work Plan	Start Date	Not to exceed 1 day	<input type="checkbox"/> During business hours (6am-6pm M-F) <input type="checkbox"/> After business hours <input type="checkbox"/> Holiday/Weekend Work
	Start Time	Stop Time	
	Protection of Others (traffic control): <input type="checkbox"/> Barricades <input type="checkbox"/> Vests <input type="checkbox"/> Flags Impact on Others: <input type="checkbox"/> Security Systems <input type="checkbox"/> Utilities <input type="checkbox"/> Telephones/Computers	Communication Methods with Entrants: <input type="checkbox"/> Voice <input type="checkbox"/> Radio <input type="checkbox"/> Phone <input type="checkbox"/> Visual <input type="checkbox"/> Rope Signals <input type="checkbox"/> Other _____	Method to Contact Emergency Services: <input type="checkbox"/> Phone <input type="checkbox"/> Radio <input type="checkbox"/> Other _____
	Personal Protective Equipment: <input type="checkbox"/> Coveralls <input type="checkbox"/> Tyvek suit <input type="checkbox"/> Leather Gloves <input type="checkbox"/> Chemical Resistant Gloves <input type="checkbox"/> Welding Gloves <input type="checkbox"/> Welding Hood <input type="checkbox"/> Eye Protection <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Respiratory Protection <input type="checkbox"/> Safety shoes/boots <input type="checkbox"/> Hard Hat <input type="checkbox"/> Harness/life line (Inspected prior to entry?) <input type="checkbox"/> Tripod/winch <input type="checkbox"/> Other	Monitoring of Space: O₂, CO, LEL <input type="checkbox"/> Initial <input type="checkbox"/> Every 30 minutes <input type="checkbox"/> Every 15 minutes <input type="checkbox"/> Continuous Personal Monitoring: (specify) _____	Other Permits: <input type="checkbox"/> Hot Work Permit <input type="checkbox"/> Asbestos Permit <input type="checkbox"/> Lead Paint Permit <input type="checkbox"/> Radiation Permit
		Emergency Procedures:	
Personnel	<i>Each person must be listed below and must initial that they have read and agree with this permit</i>		
	Name/Org or Company	Training	Initials
	Entry Supervisor		
	Attendant		
	Person Entering		
Approvals	<i>For entry into "non-permit" Confined Spaces, only the Entry Supervisor must sign. For entry into Permit-required Confined Spaces, the Building Manager and the HQ Safety and Health Director must review and sign.</i>		
	Name	Signature	Date
	Entry Supervisor		
	DOE Building Manager		
	DOE HQ Safety & Health		

	Permit Number	Date	Page						
Re-evaluation	Initial assessment verified:	Ventilation verified:	Personnel verified:						
	Re-assessment verified:	Harness/Retrieval verified:	New hazards:						
	Lock-out/Tag-out verified:	Equipment verified:	Weather Conditions:						
Monitoring	Type of Gas Monitor:	Make/Model/SN:	Date of Last Calibration:						
	Name of Tester:	Signature of Tester:							
	Test Date:	/Pre-Entry	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
	Times:								
	Oxygen (19.5-23.5%)								
	Combustible Gas (Below 10% LEL)								
	Toxic Gas ()								
	Other ()								
	Initials of Tester								
	Initials of Entry Supervisor								
	Initials of Attendant								
	Initials of Entrant		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cancellation	Reason for Cancellation of Permit: <input type="checkbox"/> Unauthorized Entry <input type="checkbox"/> Hazard Uncovered <input type="checkbox"/> Site conditions changed <input type="checkbox"/> Work was stopped <input type="checkbox"/> Work was completed Explain:								
	Notes/Additional Information:								
	Name	Signature				Date			
	Entry Supervisor								
	Other								

APPENDIX F

DOE Headquarters Confined Space Rescue Procedures

1. Immediately call the CAS by radio or telephone (FORS – 202-586-6900; GTN – 301-903-2403)
 - Tell them that confined space rescue assistance is needed by the Fire Department (either District of Columbia or Montgomery County).
 - Tell the CAS where you are located.
 - The CAS will call the Fire Department and direct them to your location.
 2. Remove the victim by use of the retrieval line from outside the confined space if this can be accomplished without creating further hazard for the entrant or the attendant.
 3. If able to remove the victim with the retrieval line, administer first aid within the limits of his/her training until emergency response personnel arrive.
 4. If unable to remove the victim by using the retrieval line, Attendant must wait for help to arrive.
- No one is to enter the confined space for any reason and the Attendant is not to leave the area.**
5. Give emergency response personnel any information they request.