BY ORDER OF THE COMMANDER *911 AIRLIFT WING INSTRUCTION 91-301*

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Safety

CONFINED SPACE PROGRAM

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This instruction implements Air Force Policy Directive (AFPD) 91-3, *Occupational Health and Safety*, incorporates the Air Force Occupational Safety and Health (AFOSH) Standard 91-501, *Air Force Consolidated Occupational Safety Standard,* AFOSH Std 91-25, *Confined Spaces* and 29 CFR 1910.146. It establishes the Commander's Confined Space Program as required by law. This instruction applies to all personnel assigned to the 911th Air Reserve Station, Pittsburgh IAP Pa.

1. Introduction: This written plan contains requirements for practices and procedures which provide protection for the 911 AW employees who may enter and/or work within confined spaces.

2. Roles and Responsibilities:

2.1. **Installation Ground Safety Manager (SEG):** With assistance from the base safety staff, the Ground Safety manager is responsible for:

2.1.1. Serving as the focal point for implementation of this standard.

2.1.2. Coordinating the installation of the Confined Space Program.

2.1.3. Leading the installation of the Confined Space Program Team (CSPT).

2.1.4. Ensuring the SEG representatives on the CSPT are trained in confined space requirements.

2.1.5. Maintaining confined space records, including a listing of all permit-required and non-permit required confined spaces.

2.1.6. Verifying all possible means have been employed in an effort to reduce the hazard classification of the space.

2.1.7. Verifying organizational entry supervisors are trained, qualified, and experienced to authorize permit-required confined space entries.

2.1.8. Verifying organizational procedures confirm appropriate rescue teams and equipment are immediately available prior to planned entry.

2.1.9. Evaluating the effectiveness of unit procedures implemented to protect the entrants. In conjunction with Bioenvironmental (SGPB), assisting entry supervisors and functional managers in the selection of PPE.

2.1.10. Assisting, as required, in training entry supervisors who issue entry permits and authorize entries into permit-required confined spaces.

2.1.11. When required, assisting the functional manager in obtaining training for confined space entry team members.

2.1.12. When required, training organizational confined space entry members on the requirements contained in AFOSH 91-25.

2.1.13. Reviewing and approving non-routine entry permits which are not contained in an organization Master Entry Plan (MEP).

2.2. **Installation Fire Chief (CEF) Responsibilities:**

2.2.1. Coordinating rescue support for confined space entries according to local agreements.

2.2.2. Providing confined space entry rescue support to tenant units and contractors according to local support agreements.

2.2.3. Ensuring the CEF representatives on the CSPT are trained in confined space requirements.

2.2.4. Assisting, when requested, the functional manager in obtaining training for entrants, entry supervisors, and organizational rescue teams.

2.2.5. Reviewing and approving non-routine entry permits which are not contained in an organization MEP.

2.2.6. Evaluating confined spaces for flammable, explosive, or oxygen enriched atmospheres when permitting entries that are not covered by the MEP.

2.2.7. Being a member of the CSPT.

2.3. **Bioenvironmental Engineering (SGPB):**

2.3.1. The SGPB is responsible for:

2.3.1.1. Enrolling, when applicable, all personnel who may enter confined spaces in the installation respiratory protection program.

2.3.1.2. Ensuring the SGPB representatives on the CSPT are trained in confined space requirements.

2.3.1.3. Providing local training on the use, calibration (user), and care of atmosphere testing and monitoring equipment.

2.3.1.4. Documenting the location of each confined space in the appropriate case file with the information provided by the functional manager.

2.3.1.5. Reviewing and approving non-routine entry permits which are not contained in an organization MEP.

2.3.1.6. Assisting in training personnel for confined space duties.

2.3.1.7. Evaluating worker exposure to hazardous chemicals.

2.3.1.8. Assisting in the selection of appropriate respiratory equipment and other PPE.

2.3.1.9. Assisting functional managers and entry supervisors in the selection of proper PPE.

2.3.1.10. Assisting entry supervisors in the interpretation of monitoring results.

2.3.1.11. If certified organizational personnel are not available:

2.3.1.11.1. Evaluating confined spaces for hazardous atmospheres and Immediately Dangerous to Life and Health (IDLH) conditions.

2.3.1.11.2. Sampling the atmosphere in the confined space as often as may be required to ensure changing conditions do not result in unacceptable atmospheres.

2.3.1.12. Being a member of the CSPT.

2.4. **Confined Space Program Team (CSPT):**

2.4.1. The CSPT shall include representatives from SEG, CEF, SGPB, and the functional manager, commander, or their designated representative.

2.4.2. The CSPT is responsible for:

2.4.2.1. Assisting functional managers and commanders in developing and administering confined space programs.

2.4.2.2. Assisting, with the participation of the functional managers and commanders, in the identification, evaluation, and classification of all confined spaces.

2.4.2.3. Developing and providing a CSPT train-the-trainer program for entry supervisors.

2.4.2.4. Assisting in developing local controls and procedures for confined space entries.

2.4.2.5. Developing a MEP when requested by the functional manager or commander.

2.5. **Commanders and (or) Functional Managers:**

2.5.1. The Commander and (or) Functional Manager is responsible for:

2.5.1.1. Ensuring a written confined space program is developed for confined spaces within the functional manager's control.

2.5.1.2. Serving as a member or designating a representative to the CSPT for management of confined spaces within the functional manager's control.

2.5.1.3. Assisting in the MEPs.

2.5.1.4. Ensuring all personnel who are assigned duties and responsibilities which support the permit-required confined space program tasks are properly trained, equipped, and qualified and that the training is documented.

2.5.1.5. Ensuring required equipment is procured to support entry into confined spaces.

2.5.1.6. Ensuring a current list of all confined spaces, both permit-required and non-permit is maintained.

2.5.1.7. Providing a copy of the list of all confined spaces, permit-required and non-permit, to the host installation ground safety manager, fire chief, and bioenvironmental engineering.

2.5.1.8. Designating entry supervisors.

2.5.1.9. Reviewing all non-permit-required spaces within their area of responsibility at least annually to ascertain that no changes occurred which would affect the original classification.

2.6. **Entry Supervisor:**

2.6.1. The Entry Supervisor is responsible for:

2.6.1.1. Maintaining the organizational MEP.

2.6.1.2. Issuing entry permits consistent with the MEP.

2.6.1.3. Revoking the permit and contacting SEG when any entry conditions are not consistent with the MEP.

2.6.1.4. Determining acceptable conditions are present at a permit space where entry is planned.

2.6.1.5. Ensuring a qualified person (trained in the operation of direct-reading oxygen, flammability, and toxicity monitoring equipment) evaluates and classifies the confined space using the information in **Table 1.**.

2.6.1.6. Coordinating assistance from SEG, CEF, or SGPB officials, as required.

2.6.1.7. Ensuring workers are properly trained and qualified in safe operating and emergency procedures, use of protective equipment, and how to egress.

2.6.1.8. Ensuring workers who are ill or are on medication, which may affect their ability to safely perform assigned tasks, are excused from the operation.

2.6.1.9. Briefing workers on the hazards of entry, i.e., chemicals that were in the tank, the effects of inhalation vapors, and what safety and health hazards are inherent in cleaning or internal confined space operations.

2.6.1.10. Inspecting the work area, tools, and equipment to identify and correct hazards.

Selecting the appropriate PPE with help from SEG, CEF, and SGPB personnel.

Ensuring the availability and use of all protective clothing and other PPE necessary for safe entry.

2.6.1.11. Ensuring respiratory equipment is in safe operating condition and personnel are trained to understand the proper procedures for use.

2.6.1.12. Ensuring all valves are isolated, locked out, and blinded or blanked to prevent anything from being accidentally pumped into the confined space.

2.6.1.13. Ensuring all electrical power sources and equipment meet safety requirements for the atmosphere in the confined space.

2.6.1.14. Ensuring all electrical power is de-energized and locked out.

2.6.1.15. Establishing emergency procedures to rescue persons incapacitated in the confined spaces.

2.6.1.16. Being the last person to sign the permit after all conditions are met.

2.6.1.17. If necessary, performing entrant or attendant duties when properly trained.

2.6.1.18. Transferring the duties of the entry supervisor to anther qualified supervisor during the course of the entry operations and ensuring that the new supervisor signs or initials the entry permit when the transfer is complete.

2.6.1.19. If space on the permit is not adequate, maintaining a list of names of workers as a separate document and attaching them to the permit entry form.

2.6.1.20. Ensuring that the entry permit is maintained at the site where the entry is planned.

2.6.1.21. Providing an attendant for each permit entry.

2.6.1.22. Providing appropriate vehicle and pedestrian guards, barriers, or other means to protect the entry party and attendants from local traffic hazards and to protect non-entering personnel from hazards arising from the confined space.

2.6.1.23. With assistance form SEG, CEF, or SGPB personnel, as appropriate, determining and evaluating the source (i.e., removal of residue from the space, repair of leaking valve or pipe in the space, etc.) of any suspected atmospheric condition found at the time of entry.

2.6.1.24. Making appropriate provisions in case the severity of a hazard could increase while employees are in a confined space.

2.6.1.25. Revoking the entry permit, terminating the entry, and securing the site when becoming aware of a prohibited or unexpected condition. Ensuring a new entry permit is processed prior to reentry.

2.7. **Entrants:**

2.7.1. The Confined Space Entrant is responsible for:

2.7.1.1. Fully understanding all procedures, safeguards, and emergency egress and (or) rescue procedures associated with the entry before signing on the permit.

2.7.1.2. Following all safe work procedures required.

2.7.1.3. Notifying the entry supervisor when hazards exist that have not been corrected.

2.7.1.4. Notifying the entry supervisor if he or she is ill or on medication.

2.8. **Attendants:**

2.8.1. The Confined Space Attendant is responsible for:

2.8.1.1. Maintaining an accurate accounting of entrants (who and number) in the permit space.

2.8.1.2. Remaining outside the permit space

2.8.1.3. NOT attempting rescue involving entry, until the rescue team has been notified and assistance has arrived.

2.8.1.4. Making rescue efforts by means of the lifeline until assistance arrives.

2.8.1.5. Maintaining continuous communication with all authorized entrants within the permit space by voice, visual observation, or other equally effective means.

2.8.1.6. Ordering entrants to exit the confined space at the first indication of a non-permitted condition, an unexpected hazard, indication of a toxic reaction (i.e., unusual conduct by the entrants), or if a situation occurs outside the space that could pose a hazard to the entrants.

2.8.1.7. Knowing the procedure and having the means to summon immediate emergency assistance if needed.

2.8.1.8. Remaining at the attendants post and not leaving for any reason (except self-preservation) unless replaced by an equally qualified individual.

2.8.1.9. Ordering the entrants to exit the space if the attendant must leave and there is no replacement.

2.8.1.10. Keeping unauthorized persons from entering the permit space.

3. Identifying Confined Spaces:

3.1. **General:**

3.1.1. The functional manager or commander, in coordination with personnel on the CSPT, will identify, evaluate, and classify each confined space within their area of responsibility.

3.1.2. They will inform employees of the confined space(s) by sign, placard, or other effective means to prevent inadvertent entry.

3.1.3. All personnel will assume confined spaces are permit-required until proven otherwise by means of testing and (or) inspection.

3.2. **Posting Signs:**

3.2.1. If there are confined spaces designated as permit-required and workers and other employees could inadvertently enter, the supervisor will ensure personnel are informed of the existence, location, and the danger of the permit space by posting danger signs stating: "DANGER - CONFINED SPACE - ENTRY BY PERMIT ONLY".

3.2.2. Confined spaces where personnel cannot inadvertently enter, such as those protected by heavy manhole covers which require tools to remove, need not be posted.

4. Evaluating Confined Spaces:

4.1. Functional managers and entry supervisors, in coordination with the CSPT, must evaluate many factors prior to entry into, or work in, a confined space. Such evaluations will include, but not necessarily limited to, the following:

4.2. The contents or previous contents which may result in the presence of a hazardous atmosphere.

4.3. Location and configuration of the space which may inhibit movement, ventilation, rescue efforts, fire fighting efforts, etc.

4.4. Potential hazards from the external environment, such as Liquid Oxygen (LOX) storage operations, underground disposal sites, and sewer and waste water treatment process which could affect the atmosphere within the confined space.

4.5. Types of operations to be conducted within the space which may produce a hazardous atmosphere.

4.6. Fixtures, devices, or equipment within the space that may create or contribute to hazardous conditions including piping, conduit, pressurized lines, ducts, etc.

4.7. Presence of other hazards such as slippery surfaces, unstable ladders, etc.

4.8. The boundary spaces and their contents, to ensure fire or explosion are not caused in these boundary spaces by operations conducted in the confined space personnel are working in.

5. Testing of Confined Spaces:

5.1. **Approved Equipment:**

5.1.1. The entry supervisor will ensure testing and monitoring equipment used in confined spaces are approved for use.

5.1.2. Only direct reading equipment with current calibration will be used.

5.1.3. The entry supervisor will also ensure certification is by a nationally recognized testing laboratory.

5.2. **Procedures:**

5.2.1. Testing will be done prior to entry into a permit-required confined space.

5.2.2. The testing will be performed by a qualified person who is trained in the operation of direct-reading oxygen, flammability, and toxicity monitoring equipment.

5.2.3. Training on monitoring equipment will be documented on the individual's AF IMT 55, **Employee Safety and Health Record** / electronic data base or other area required by organization.

5.2.4. Initial testing will be performed from outside the space.

5.2.5. Testing into the interior of the space may be performed by drop tests or insertion of sample probes or hoses into the space.

5.2.6. Testing will be performed in the following sequence:

5.2.6.1. Oxygen content

5.2.6.2. Flammability

5.2.6.3. Toxic material

5.2.7. Testing will be conducted throughout the entire area of the confined space.

5.2.8. Atmospheric monitoring may be required as work progresses.

5.2.9. The frequency and types of testing are dependent on the prevailing conditions of the operation.

5.2.10. The entry supervisor, with assistance from SEG, CEF, and SGPB shall establish the frequency and type of tests for atmospheric monitoring.

5.2.11. These requirements will be entered on the entry permit.

5.2.12. The following types of operations will be carefully evaluated, by SGPB, for continuous atmospheric monitoring:

5.2.12.1. Work which has the potential for generating hazardous concentrations of toxic materials.

5.2.12.2. Application of preservatives, paints, epoxies, etc., which may involve hazardous concentrations of flammable or toxic vapors.

5.2.12.3. Cleaning operations, sludge removal, etc., which may produce or cause release of hazardous concentrations of toxic or flammable vapors.

5.2.12.4. Any similar operation which posses the potential for producing or releasing toxic, flammable, or asphyxiating atmospheres or materials into the space.

Table 1. Confined Spaces Classification–Atmospheric Conditions

PARAMETER	PERMIT-REQUIRED CONFINED SPACE	NON-PERMIT CONFINED SPACE
Characteristics	**Immediately dangerous to life or health (IDLH). Potential for or has contained a hazardous atmosphere.	No hazardous atmosphere with no credible potential for a hazardous atmosphere, engulfment, or entrapment.
Oxygen	Less than 19.5 percent *(less than 148 mm Hg) or greater than 23.5 percent *(greater than 179 mm Hg).	19.5 percent - 23.5 percent– *(148–179 mm Hg).
Flammability	Greater than 10 percent (LEL).	Less than or equal to 10 percent LEL.
Toxicity	An atmosphere concentration of any chemical substance over the occupational exposure limit (OEL) which is capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health affects.	An atmosphere concentration of any chemical substance, regardless of OEL, which is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health affects.

*Based upon a total atmospheric pressure of 760 mm Hg (sea level).

**Immediately Dangerous to Life or Health–as referenced in National Institute for Occupational Safety and Health (NIOSH) Registry to Toxic and Chemical Substance, Manufacturing Chemists data sheets, or other recognized authorities.

5.3. **Calibration of Monitoring Equipment:**

5.3.1. Monitoring equipment shall be calibrated by Testing, Measurement, Diagnostic, and Evaluation (TMDE) Lab at an interval established by the TMDE technical orders or manufacturer's instructions. Some monitoring equipment (i.e., colorimetric tubes) do not require calibration.

5.3.2. Equipment that comes with manufacturer-approved calibration devices and does not require TMDE calibration is acceptable.

5.3.3. Monitoring equipment that requires calibration, but cannot be calibrated by TMDE, shall be sent to the manufacturer for calibration.

5.3.4. The user will field check the equipment according to manufacturer's instructions immediately before testing the confined space.

5.3.5. Equipment that fails the field check or cannot be calibrated WILL NOT be used, until it is repaired and the calibration and (or) field check is successfully accomplished.

5.3.6. Be sure to record calibrations and when sensors are replaced on inspection records.

6. Training:

6.1. **General:**

6.1.1. Personnel that enter a confined space shall participate in a structured and effective training program to establish safe work practices and techniques.

6.1.2. The training program will be based on specific hazards to be encountered.

6.1.3. The trainer will obtain SEG, CEF, and SGPB approval on all training lesson plans prior to their use and any time changes are made to the lesson plans.

6.1.4. The entry supervisor will ensure all individuals (who are authorized confined space entry to perform confined space work or are assigned as attendants or rescue personnel) are trained.

6.1.5. The entry supervisor will ensure employees are made aware of the appropriate procedures and controls for entry and, also, that unauthorized entry into such spaces is forbidden and may be fatal; and that their senses are unable to detect and evaluate the severity of atmospheric hazards.

6.2. **Training Guidelines:**

6.2.1. The following are training guidelines to help supervisors establish lesson plans:

6.2.1.1. Entrants:

6.2.1.1.1. The entry supervisor will ensure employees are trained in emergency procedures and have received training covering the following areas:

6.2.1.1.2. Hazard Recognition. Entrants must be able to determine the need to perform appropriate testing prior to entering a confined space containing a potentially hazardous environment.

6.2.1.1.3. Personal Protective Equipment. Entrants must be trained on the proper use of all PPE (including respirators and clothing required for entry or rescue) and the proper use of protective shields and barriers.

6.2.1.1.4. Self-Rescue.

6.2.1.1.4.1. Employees are trained to:

6.2.1.1.4.2. Exit from the confined space whenever the order to evacuate is given by the attendant, whenever an automatic evacuation alarm is activated, or when employees recognize the warning signs or exposure to substances whose presence in the space is known or suspected.

6.2.1.1.4.3. Know the toxic effects or symptoms of exposure to anticipated hazardous materials they are using.

6.2.1.1.4.4. Relay an alarm to the attendant and attempt self rescue immediately on becoming aware of the effects of a hazardous atmosphere.

6.2.2. Entry Supervisor:

6.2.2.1. Supervisors will ensure entry supervisors meet the training requirements of an entrant and are trained to:

6.2.2.1.1. Recognize the effects of exposure to hazards reasonably expected to be present.

6.2.2.1.2. Perform duties and responsibilities of an entry supervisor.

6.2.3. Attendant:

6.2.3.1. The entry supervisor will ensure attendants are trained in the following areas, as well as meet the requirements of an entrant (if designated to perform that function):

6.2.3.1.1. Emergency procedures.

6.2.3.1.2. Duties and responsibilities of an attendant.

6.2.3.1.3. Proper use of communication equipment.

6.2.3.1.4. Procedures for summoning rescue or other emergency equipment.

6.2.3.1.5. Recognize early behavioral signs of potential over exposure caused by contaminants whose presence can be anticipated.

6.2.4. Organization Rescue Personnel

6.2.4.1. The entry supervisor will ensure organizational rescue team members are trained in the following subjects (they will also meet training requirements of an entrant):

6.2.4.1.1. Rescue duties and responsibilities.

6.2.4.1.2. How to use retrieval and rescue equipment.

6.2.4.1.3. The proper wearing and use of PPE.

6.2.4.1.4. Basic first-aid and CPR proficient (Bloodborne Pathogen training as well)

6.2.4.1.5. Hands-on practice in removal of simulated victims (dummies, mannequins, or real people) through representative openings which have the same size, configuration, and accessibility as the actual spaces from which rescue would be required.

6.2.5. This training will be conducted initially for each team member and once every 12 months thereafter as long as the individual remains on the rescue team.

6.2.6. Confined Space Tester/Monitor:

6.2.6.1. The person designated to conduct tests of confined space atmospheric conditions must be trained in the operation, calibration, and care of the specific testing equipment to be used.

6.2.6.2. The person conducting the tests must be fully trained and certified as qualified to interpret the results.

6.2.6.3. The tester shall meet the training requirements of an entrant if entry is required to conduct the tests.

6.3. **Documentation of Training:**

6.3.1. All confined space training for entry supervisors, entrants, attendants, testers and (or) monitors, and rescue team members shall be certified, documented, and kept up-to-date.

6.3.2. The certification shall contain each individual's name and dates of training or retraining and either the initials or signature of the trainer and (or) instructor.

6.3.3. Training will be documented on the workers AF IMT 55 and or Electronic data base.

6.3.4. Training records will be available for review by the CSPT during annual program evaluations or spot checks.

7. Entry into Confined Spaces:

7.1. **General:**

7.1.1. The entry supervisor will ensure workers enter a PERMIT-REQUIRED confined space only after an AF IMT 1024, **Confined Space Entry Permit**, has been initiated.

7.1.2. An entry permit for a specific task in a permit-required confined space must be approved by SEG, CEF, and SGPB personnel.

7.1.3. Where the contaminations are caused by materials or conditions within the space, the entry supervisor will identify the cause or source of the contamination and remove it to the maximum degree possible by cleaning, ventilating, or other such treatments.

7.1.4. Where the operations to be conducted within the space introduce (or have the potential to introduce) additional hazards within the space, the entry supervisor will ensure these hazardous conditions and operations are covered by the permit and take action consistent with the nature of the operations to control the hazards and maintain safe conditions within the space.

7.1.5. The entry supervisor will ensure an attendant is provided for all permit-required confined space entry and work.

7.1.6. The attendant will know the procedure and have the capability to contact the rescue team or summon emergency assistance if the rescue team is not stationed immediately outside the confined space.

7.1.7. The entry supervisor will authorize entry into the confined space by his or her signature on the entry permit and will ensure the following conditions are met:

7.1.7.1. There is no known potential for an IDLH atmosphere or an engulfment.

7.1.7.2. The entrants are trained in routine recurring operations practices and procedures required for such entries.

7.1.7.3. The work operations are governed by Technical Order (TO), Operating Instruction (OI), or similar directive.

7.1.7.4. The space is tested for atmospheric hazards.

7.1.7.5. The permit is revoked whenever any testing required shows conditions in the space are more hazardous than contemplated under the permit.

7.1.7.6. The entry supervisor will stop operations and ensure a new permit is used.

7.1.7.7. Retain the revoked permit for 1 year.

7.1.7.8. The permit is revoked when any conditions of the permit are not followed or enforced.

7.1.7.8.1. The entry supervisor may reclassify a permit-required confined space to a non-permit confined space at the time of a specific entry.

7.1.7.8.2. The entry supervisor will not permit entry into and work in known IDLH spaces under normal operations.

7.2. **Permits:**

7.2.1. The permit is an authorization and approval in writing that specifies the location and type of work to be done.

7.2.2. The permit certifies that an evaluation of all existing hazards and the necessary protective measures have been taken to ensure the safety and health of each worker.

7.2.3. Entrants will sign the permit indicating an understanding of confined space entry and rescue requirements, and the entry supervisor will sign as the person responsible for the entry. CAUTION: The permit is not valid unless the entry supervisor has signed it.

7.2.4. If necessary, maintain signatures of workers on a separate document and attach them to the entry permit.

7.2.5. Any problems encountered during an entry shall be noted on The Confined Space Entry Permit or attachment –noting what went right with the entry and what went wrong so necessary revisions can be made to the confined space program.

7.2.6. Log in each permit issued for confined space entry on Confined Space Entry Log.

7.2.7. Each completed entry permit, including those that are canceled or revoked, shall be retained for 1 year by the organization responsible for the entry and available for review.

7.2.8. Entry permits do not have to be posted.

7.3. **Welding, Cutting, and Brazing (Hot Work):**

7.3.1. Whenever workers will perform hot riveting, welding, cutting or burning, or heating operations within a confined space, an AF IMT 592, **USAF Welding, Cutting and Brazing Permit,** from CEF must be obtained with appropriate signatures.

7.3.2. If hazards may be introduced into the confined space due to the “hot work”, the SGPB should be contacted to evaluate the potential hazards and recommend ventilation procedures. In addition the workers will:

7.3.2.1. Inspect, test, operate, and maintain welding and cutting equipment such as hoses, connections, torches, etc., according to the provisions of AFOSH Standard 91-5, *Welding, Cutting, and Brazing,* and applicable to TOs.

7.3.2.2. Not take compressed gas cylinders or gas manifolds used for welding and cutting operations into the confined space.

7.3.2.3. Turn off gas supplies at the cylinder or manifold outside the space when equipment is unattended or unused for substantial periods of time, such as at breaks or lunch periods.

7.3.2.4. At shift changes (30 minutes or more) or overnight, turn off gas supplies and remove torches and hoses from the space.

7.3.2.5. Immediately remove open-ended hoses from the space when torches or other devices are removed from the hose.

7.3.2.6. DO NOT take electric arc units or machines into a confined space. Place such units outside the space.

7.4. **Non-Permit Required Confined Space:**

7.4.1. Reclassification to a non-permit required confined space would allow entry without a permit, without personnel being suited with a harness and (or) a lifeline, and without an attendant, provided:

7.4.1.1. Testing is accomplished prior to entry with the results showing the space to be free of all hazards. NOTE: If entry is required to eliminate the hazards in the permit space, the entry must be made with an entry permit. Once the hazards have been eliminated, the space may be reclassified as non-permit as long as the hazards remain eliminated.

7.4.1.2. The actual or potential atmospheric hazards are eliminated, and continuous monitoring is used to ensure that the atmosphere remains free of hazards.

7.4.1.3. That all hazards within the space are eliminated without entering the space at the time of testing, and any non-atmospheric hazards remain eliminated.

7.4.1.4. That during routine work, the entrant does not take tools or introduce material into the space that could themselves cause a hazard.

7.4.1.5. The entrant does not perform any work that would cause a hazardous condition.

7.4.1.6. The entry permit is revoked whenever any test, monitoring instrument, or observation shows hazardous conditions are developing in the confined space more hazardous than allowed under the permit. When this occurs, the entry supervisor will secure the area and prevent entry until an approved entry permit is issued.

7.4.1.7. The entry supervisor documents the basis for the reclassification on a separate sheet, attaches it to the entry permit and signs or initials next to the statement.

7.4.1.8. These confined spaces are not considered hazardous and have no reasonable probabilities to become hazardous.

7.4.1.9. These spaces are defined as confined because of design, may have limited openings for entry and exit, and may have limited space (lateral fuel pits under 5 feet deep, dikes less

than 6 feet in height around fuel storage tanks areas defined as non-permit required in aircraft T.O. est.).

7.4.1.10. Entry into a non-permit required confined space does not require a permit unless conditions within or around the space have changed since classification (example: fuel that has settled in diking around bulk storage). At that time the entry supervisor, SEG, CEF, and SGPB personnel will reevaluate the confined space to determine if a permit is required.

7.4.1.11. Hazards such as slippery surfaces, or deteriorated pipe ladders may make self-rescue difficult for the entrant.

7.4.1.12. Also, fuel pits less than 5 feet deep with jet fuel accumulation due to line leak may present a hazard to repair crews. In cases where no entry permit is required, it may be appropriate for entrants to use a body harness to facilitate rescue operations in case of problems, for an attendant to be assigned to monitor the entry process, or other special procedures developed to protect entrants.

7.4.1.13. Non-permit required confined spaces shall be reviewed, at least annually, to ensure that conditions have not changed which could result in a potential for hazards and a change in confined space classification.

7.4.1.14. A non-permit required confined space will be reevaluated any time a known change in mission occurs or new construction is planned which may affect the space or the area immediately adjacent to the space.

7.5. **Ventilation:**

7.5.1. When initial testing indicates ventilation is required to remove detected contaminants and (or) provide adequate oxygen levels, the entry supervisor will ensure ventilation is provided during entry and occupancy of the space.

7.5.2. NEVER use pure oxygen to ventilate a confined space.

7.5.3. Ventilate with ambient air.

7.6. **PPE/Equipment:**

7.6.1. The entry supervisor will:

7.6.1.1. Contact the local SGPB staff for assistance in selecting the appropriate respiratory protective equipment and other PPE as determined necessary to protect the entrant.

7.6.1.2. Ensure only explosion proof or intrinsically safe equipment is used where flammable or explosive atmospheres are present.

7.6.1.3. Ensure personnel entering a permit-required confined space are suited with a harness and lifeline of a type suitable to permit extraction of the person (does not become a hindrance to the extraction) from the space.

7.6.1.4. Ensure the lifeline is securely attached to the harness and adequate attachment points outside the confined space are available and used. When the space is so configured that the use of a lifeline would present additional hazards, a harness and lifeline will not be used.

7.6.2. Provide personnel within the space with NIOSH-approved respiratory protective equipment suitable for the exposure, where toxic materials are or may be introduced into the space.

7.6.3. Any atmosphere with less than 19.5% oxygen should not be entered without self-contained breathing apparatus (SCBA).

7.7. **Communications:**

7.7.1. The entrants and attendant outside the space will establish and maintain communications.

7.7.2. If it is not possible for one attendant to maintain communications with each entrant because of the entrant's work station in the space, the supervisor will make other arrangements to ensure the attendant is continuously aware of the location and condition of any entrant who is out of direct communication range.

7.8. **Master Entry Plan (MEP):**

7.8.1. A Master Entry Plan shall be developed when requested by the functional manager or commander.

7.8.2. The MEP, a part of the overall written confined space program, will serve as approval for recurring entries having the same conditions and entry requirements when signed by representatives of Ground Safety (SEG), Fire Protection (CEF), and Bioenvironmental Engineering (SGPB). The MEP allows functional managers and commanders to designate entry supervisors to issue entry permits.

7.8.3. Using the MEP as a guide, the entry supervisor will prepare an entry permit.

7.8.4. Permits, issued by an entry supervisor under MEP, will permit entry into a specific confined space, for a specific purpose, by a specific work crew, for a period not to exceed a single shift or as determined jointly by the CSPT. All applicable areas of the permit must be filled out correctly and completely. NOTE: Rescue entry is exempted from this requirement.

7.8.5. For routinely recurring work in permit-required confined spaces (i.e., sewers, lateral fuel pits, dikes, aircraft spaces,) where the space may be entered on a regular basis, a MEP may be developed and approved by SEG, CEF, and SGPB personnel.

7.8.6. Permits will not be issued when unexpected conditions exist that have not been anticipated or allowed for in the MEP, unless the condition can be eliminated or controlled. If hazardous conditions develop after entry that cannot be eliminated or controlled, the entry will be terminated, the permit revoked and retained for 1 year, and SEG, CEF, and SGPB will be contacted before proceeding.

7.8.7. All Master entry plans shall be reviewed by SEG, CEF, and SGPB and the organizational representative at least annually, to ensure conditions have not changed.

7.8.8. The MEP will:

7.8.8.1. Describe the acceptable entry conditions, including acceptable atmospheric conditions, under which permits may be issued.

7.8.8.2. Designate as many entry supervisors as needed for the organization.

Identify the types and locations of spaces to be entered, and the types of tasks or operations to be performed.

7.8.8.3. List either by reference or direct statement in the MEP the procedures to be used for entry (e.g. shop operating instructions [OI] that cover specific tasks or Technical Orders [T.O.]).

7.8.8.4. Account for around-the-clock operations when appropriate.

7.8.8.5. List PPE, monitoring and rescue equipment, and conditions under which it will be used.

7.8.8.6. Designate frequency and type of atmospheric monitoring.

7.8.8.7. List other controls required (e.g. lockout and (or) tagout, ventilation, etc.).

7.8.8.8. List chemicals and quantities authorized for use.

7.8.8.9. List expected exposure levels based on air sampling results.

7.8.8.10. List conditions under which the space may be reclassified.

7.8.8.11. Provide procedures for amending the MEP.

7.8.8.12. Require verification of the condition of all monitoring equipment and PPE.

7.8.8.13. Be maintained by the entry supervisor.

7.8.8.14. Include provisions for entry during potential emergency situations.

7.8.8.15. Establish emergency rescue procedures for each permit-required confined space.

7.8.8.16. Establish communication procedures and identify communication equipment to be used during entries.

7.8.8.17. Determine atmospheric monitoring requirements.

7.8.8.18. Evaluate and approve MEPs.

7.8.8.19. Review the installation confined space program at least annually. The review will include a review of all MEPs and an assessment of training, rescue procedures, qualifications of entry supervisors, and a review of expired and (or) revoked entry permits.

7.8.8.20. Establish procedures with the contracting office to review all new construction projects to identify and record and classify confined spaces.

7.8.8.21. Permit the use of the AF IMT 1024, **Confined Spaces Entry Permit**, or may authorize the use of an automated product or letter format for the MEP. NOTE: Major Commands may standardize MEP documentation to fit command needs.

7.8.8.22. Will, when possible, periodically monitor permit-required space entry operations.

8. Emergency and Rescue Procdeures:

8.1. General:

8.1.1. The MEP will include emergency and rescue procedures consistent with the nature of each known operation which requires entry into a permit-required confined space.

8.1.2. The entry supervisor will coordinate with the installation CEF, SEG, and SGPB when required to enter non-routine permit-required confined spaces not included in the MEP and establish emergency rescue procedures prior to entry.

8.1.3. When entering a permit required space, rescue equipment will be available and set up on the site prior to entry!

8.1.4. If the rescue team is no longer available, the entry will be terminated immediately.

8.1.5. Allegheny County Airport Authority Fire Department (ACAAFD) or the organizational rescue team shall be available at the scene for permit-required confined space entries under IDLH conditions.

8.1.6. The appropriate CSPT member will assist as required in the selection of equipment for organizational rescue teams.

8.2. **Means of Rescue:** There are three primary means of rescue used; Self-Rescue, the ACAAFD and the Organizational Rescue Team.

8.2.1. Self-Rescue - Employees are trained to exit from the confined space when required.

8.2.2. "ACAAFD Rescue Team":

8.2.2.1. The ACAAFD will provide rescue services for personnel working in confined spaces on 911 AW. The entry supervisor will contact ACAAFD prior to entering a PERMIT-REQUIRED confined space, to coordinate rescue assistance and ensure its availability within a reasonable period of time.

8.2.2.2. When deemed appropriate by the fire chief, the rescue team should stand by at the scene.

8.2.3. Organization Rescue Team:

8.2.3.1. When a confined space entry is to be performed in an area in which the ACAAFD cannot provide rescue assistance, the entry supervisor will ensure an organizational rescue team is available prior to entering the confined space.

8.2.3.2. An organizational rescue team will consist of trained personnel equipped with the PPE necessary for entry into confined spaces and with rescue and retrieval equipment suitable for the type of confined spaces involved.

8.2.3.3. If no rescue team is available, the entry WILL be rescheduled!

8.2.3.4. Ensuring the ready availability of rescue and safety related equipment such as lifting or retrieval devices, respiratory equipment, and others necessary for the entry as determined by the permit system.

8.2.3.5. Providing an equivalent method for rescue when retrieval lines may constitute an entanglement hazard or otherwise cannot be used.

8.2.3.6. Determining the availability of a rescue team. Verify the availability of an organizational rescue team or other emergency rescue team. The operation will be halted if for some reason the primary rescue team becomes unavailable.

8.2.3.7. Ensuring the means (i.e., telephone, radio, etc.) for summoning the rescue team are operable, on hand or easily accessible.

8.3. **Safety Equipment:** The entry supervisor will ensure the inspection, testing, maintenance, and documentation of safety and rescue equipment.

RANDAL L. BRIGHT, Colonel, USAFR
Commander

Attachment 1

ANNUAL REVIEW SHEET

Supervisor Review		Changes Made		Affected Pages	
Name	**Date**	**Y**	**N**	**Page**	**Paragraph**

Attachment 2

NON-PERMIT REQUIRED CONFINED SPACES

CRAWL SPACES UNDER BUILDINGS

DIKES

CRAWL SPACES ABOVE SUSPENDED CEILINGS

ABOVE WALK IN COOLERS

WHEEL WELLS

TAIL OF C-130

CAUTION: Any of these Non-Permit Required Confined Spaces can be elevated to a **Permit-Required Confined Space** if a hazard presents itself!!!

Attachment 3

PERMIT-REQUIRED CONFINED SPACES

PERMIT #	CLASSIFICATION OF CONFINED SPACE AREAS
0001	Storm Sewer
0002	Waste Sewer
0003	Electric Vault
0004	Telephone Manholes
0005	Water Manholes
0006	Oil Water Separator
0007	Boiler
0008	Water Meter
0009	Catch Basin
0010	Roof Top Air Conditioner
0011	Water Tank
0012	Hot Water Storage Tanks
0013	Dock Leveler, Building #312
0014	Under Ground Fuel Storage Tanks, by Building #322
0015	Above Ground Storage Tanks, JP-8
0016	Telephone Manholes, Base Wide (installation of LAN Lines)
0017	Air Tunnel, Ventilation Building #302
0018	Fuel Control Valves, Fire Pit, (change fuel filter in bldg. 114, 116)
0019	Tunnel Plumb Chase, Bldg. #221
0020	Heating Pit Bldg. #213

Attachment 4

Listing of Site Specific Confined Spaces: Entry and rescue from these confined spaces will be performed in accordance with the procedures listed in the confined space entry program. Specifically, sections 7.0 and 8.0. Exact locations and depth information can be found in the confined space entry program under the tab marked "MAPA/DEBTHS of Confined Spaces". This list is for quick reference/informational purposes and is not all inclusive nor does it replace any requirements covered in the confined space entry program.

	CONFINED SPACE	LOCATION	PHYSICAL HAZARDS	HEALTH HAZARDS	EQUIPMENT/ PPE
1	**STORM SEWER (0 - 5 FT)**	**MANHOLE #** 11, 11A, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29, 31A, 32, 33, 34, 35, 36, 37, 38A, 39, 40, 41, 43, 44A, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 62, 63, 64, 65, 65B, 65C, 66, 67, 74, 76, 78, 79, 80, 81, 86, 87, 88, 89, 90, 91, 93, 94, 97, 101, 103, 104, 105, 107, 108, 109, 112, 113, 116A, 118A, 122, 123, 124, 125, 126, 127, 128, 129, 132, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 144A, 148, 149, 150, 151, 152, 153, 155A, 156, 158, 159, 160, 162, 163, 164, 166, 166A, 167, 168, 169, 172, 174, 176, 177, 179, 183, 184, 186, 187, 191, 192, 193, 196, 199, 201, 203, 209, 213A, 215, 216, 220, 222, 223, 224, 225, 226, 227	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
1	**STORM SEWER (5 - 10 FT)**	**MANHOLE #** 8, 9, 10, 14, 42, 44, 45, 46, 47, 48, 55, 61, 65a, 68, 69, 84, 85, 92, 95, 96, 96A, 99, 100, 102, 115, 117, 120, 121, 154, 155, 157, 161, 173, 181, 182, 185, 188, 211, 212, 213, 214, 217, 218, 219	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency , Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
1	**STORM SEWER (11 - 15 FT)**	**MANHOLE #** 7, 83, 210	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls

	CONFINED SPACE	LOCATION	PHYSICAL HAZARDS	HEALTH HAZARDS	EQUIPMENT/ PPE
1	**STORM SEWER (15 - 20 FT)**	**MANHOLE #** 6, 82	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
1	**STORM SEWER (20 - 25 FT)**	**MANHOLE #** 3, 4, 5, 116	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
1	**STORM SEWER (25 - 25 FT)**	**MANHOLE #** 2	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
2	**SANITARY SEWER (0 - 5 FT)**	**MANHOLE #** 9, 10, 11, 19, 20, 26, 27, 34, 49C, 56, 57, 58, 59, 63, 65A, 65B, 68	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
2	**SANITARY SEWER (6 - 10 FT)**	**MANHOLE #** 1, 2, 3, 5, 6, 7, 8, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 30, 31, 32, 35, 36, 37, 37A, 38, 40, 43, 44, 45, 46, 49B, 53, 54, 55, 60, 62, 62, 67	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
2	**SANITARY SEWER (11 - 19 FT)**	**MANHOLE #** 4, 28, 29, 33, 39, 41, 42, 47, 48, 49, 49A, 56A, 64, 66, P-30	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
3	**ELECTRICAL VAULT (6 FT) (USE APPROPRIATE LOTO)**	**BASEWIDE**	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Electrical Shock	Safety Glasses, Hard Hat, Gloves, Coveralls, Non-Conductive Safety Shoes
4	**TELEPHONE MANHOLES (5 FT)**	**BASEWIDE**	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency	Safety Glasses, Hard Hat, Gloves, Coveralls
5	**WATER MANHOLES (6 FT)**	**BASEWIDE**	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency	Safety Glasses, Hard Hat, Gloves, Coveralls

	CONFINED SPACE	LOCATION	PHYSICAL HAZARDS	HEALTH HAZARDS	EQUIPMENT/ PPE
6	**OIL WATER SEPARATORS (3 - 4 FT)**	114, 117, 127-(3), 129, 305, 322, 411, 416, 417-(2), 420, 5521	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency, Corrosives	Safety Glasses, Hard Hat, Coveralls, Acid Resistant Gloves, Acid resistance Boots, Respirator Protection (Full Face Self Purging)
7	**BOILERS (USE APPROPRIATE LOTO)**	BASEWIDE	Restricted Entry/ Exit, Cuts/ Abrasions	Oxygen deficiency	Goggles, Hard Hat, Dust Mask, Safety Shoes, Gloves, Coveralls
8	**WATER METER PIT (8 FT)**	114	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
9	**CATCH BASIN (2 - 5 FT)**	BASEWIDE	Restricted Entry/ Exit	Oxygen deficiency, Unsanitary Conditions	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
10	**ROOF TOP AC (USE APPROPRIATE LOTO)**	110, 213, 300, 306, 405, 420, 120, 401, 419, 316, 125, 130, 403, 416	Restricted Entry/ Exit, Fall from roof top, Cuts/ Abrasions	Oxygen deficiency	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
11	**WATER TANK (USE APPROPRIATE LOTO)**	413	Restricted Entry/ Exit, Fall from slippery rungs, Cuts/Abrasions	Oxygen deficiency	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
12	**HOT WATER STORAGE TANKS (USE APPROPRIATE LOTO)**	110, 120, 206, 213	Restricted Entry/ Exit, Cuts/ Abrasions	Oxygen deficiency	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls
13	**CRAWL SPACE/ PLUMBING CHASE**	206, 208, 209, 210, 213, 216, 217, 218, 219, 221, 300, 120, 201	Restricted Entry/ Exit, Cuts/ Abrasions	Oxygen deficiency	Safety Glasses, Hard Hat, Rubber Boots, Gloves, Coveralls

	CONFINED SPACE	LOCATION	PHYSICAL HAZARDS	HEALTH HAZARDS	EQUIPMENT/ PPE
14	**ABOVE GROUND JP-8 STORAGE TANKS (USE APPROPRIATE LOTO)**	117, 118	Restricted Entry/ Exit	Oxygen deficiency, Skin Sensitivity, Explosion	Rubber - Fuel Resistant Gloves, Coveralls, Forced Air Blower - Continuous Ventilation, Full Body Harness Retrieval System