



Callaway
Energy Center

APA-ZZ-00802

CONFINED SPACE PROGRAM

MINOR Revision 024

CONFINED SPACE PROGRAM

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CONFINED SPACE PROGRAM

1.0 **PURPOSE**

To establish requirements for Ameren and Supplemental Personnel to ensure safe conditions are maintained during entry into confined spaces at the Callaway Plant.

2.0 **SCOPE**

This procedure applies to all work conducted at the Callaway Plant.

3.0 **RESPONSIBILITIES**

3.1. **Plant Personnel**

- 3.1.1. Recognizes potential confined spaces and request evaluation by supervisor prior to entry.
- 3.1.2. Do NOT enter any confined space until the requirements of this procedure have been met.
- 3.1.3. Do NOT enter a confined space to rescue personnel unless serving as part of the Rescue Team (i.e. Fire Brigade).
- 3.1.4. Identifies additional hazards in a confined space and informs supervisor.
- 3.1.5. Performs sampling of confined spaces in accordance with this procedure.

3.2. **Supervisors**

- 3.2.1. Identifies confined spaces during job planning phase.
- 3.2.2. Informs employees of confined space work.
- 3.2.3. Maintains awareness of hazards in confined spaces being entered.
- 3.2.4. Evaluates confined spaces using this procedure to determine if they are Permit Required Confined Spaces.
- 3.2.5. If evaluated as a Permit Required Confined Space, completes a CA0160, Permit Required Confined Space Entry Permit and ensure the requirements of this procedure are met before allowing confined space entry. [Ref: 5.1.1]

3.3. Safety

- 3.3.1. Assists, as needed, in evaluation of and entry into confined spaces.
- 3.3.2. Approval authority for APA-ZZ-00802 Appendix 1, Callaway Energy Center Confined Space Listing, is the Safety Manager or designee.

3.4. Chemistry

- 3.4.1. Responds and assists when plant personnel receive alarms with an air monitoring instrument.
- 3.4.2. Performs backup sampling as necessary.
- 3.4.3. Performs sampling for atmospheric hazards and post Atmospheric Hazard Permits using CDP-ZZ-01100, Atmospheric Hazard Control Program, as required.
[Ref: 5.1.3]
- 3.4.4. Assists personnel in the use of air monitoring instruments, as requested.

-END OF SECTION-

4.0 **PROCEDURE INSTRUCTIONS**

4.1. **Confined Space Entry Requirements**

4.1.1. **Confined Space Evaluation**

- a. IF working in an area that does NOT meet the definition of a confined space, BUT has the potential to contain a hazardous atmosphere, REFER to CDP-ZZ-01100, Atmospheric Hazard Control Program, AND CONTACT Chemistry. [Ref: 5.1.3]

NOTE

Planners and Supervisors attempt to identify confined spaces during job planning and work request preparation; however, all spaces may NOT be pre-identified. It is the responsibility of all personnel to recognize confined spaces.

APA-ZZ-00802 Appendix 1, Callaway Energy Center Confined Space Listing, shows areas that are pre-identified as confined spaces.

SAFETY is to assist in evaluation of the space, if requested.

- b. PRIOR to entering any confined space using Attachment 1, Confined Space Flowchart, EVALUATE the space to determine if it is a Permit Required Confined Space.
- c. IF the area is evaluated as a Permit Required Confined Space, ENSURE that the requirements of this procedure are met.

NOTE

An evaluation (UOTCR 98-050) has been performed to preclude the need to post a confined space that has a hazardous or potentially hazardous atmosphere, as a Permit Required Confined Space if the hazard is removed in some manner, i.e. ventilation AND Chemistry is notified to post the space with an Atmospheric Hazard Permit per CDP-ZZ-01100, Atmospheric Hazard Control Program [Ref: 5.1.3]

- d. IF required by attachment 1, REQUEST Chemistry to evaluate atmospheric hazards which may cause a confined space to be classified as a Permit Required Confined Space.

Step 4.1.1 Cont'd

- e. IF there are changes in a confined space that may increase the hazard, **PERFORM** the following:
 1. **EVACUATE** the confined space
 2. **REQUEST** that a re-evaluation of the space be performed.
- f. IF ventilation is used to establish acceptable conditions, **CONTACT** Chemistry to post an Atmospheric Hazard Permit per CDP-ZZ-01100, Atmospheric Hazard Control Program. [Ref: 5.1.3]

NOTE

Some confined spaces have installed ventilation (an example is the Sewage Treatment Plant Lift Station).

When ventilation is used exclusively for worker comfort, an Atmospheric Hazard Permit is **NOT** required.

- g. **PRIOR** to entry to any confined space with installed ventilation, **CHECK** ventilation is operating in these spaces. IF the ventilation is operating, atmospheric monitoring is **NOT** required for entry.

NOTE

During outage situations, it is impractical for personnel entering some confined spaces to wear an atmospheric monitor (an example of this is the Steam Generator Primary Bowls).

1. IF the following conditions are met, the Atmospheric Monitoring requirement may be waived during outage situations for these spaces/situations:
 - Ventilation is installed, **AND**
 - Safety and Chemistry concur that the Atmospheric Monitoring requirement may be waived.

NOTE

All confined spaces are required to be posted WHEN accessible.

4.1.2. Confined Space Posting

- a. WHEN access is available to the space (i.e., a manway or cover is removed), POST a danger sign stating "DANGER-CONFINED SPACE" OR "DANGER - PERMIT REQUIRED CONFINED SPACE AUTHORIZED PERSONNEL ONLY", depending on the type of confined space or similar language. CA2994, Callaway Energy Center Danger Sign, or equivalent danger sign, can be utilized.
- b. WHEN entry into a confined space is made AND entrant cannot be seen from the entry point, POST a sign stating "NOTICE – CONFINED SPACE ENTRY IN PROGRESS" or similar language. [Ref: 5.2.4]
- c. Space can be down posted from Permit Required Confined Space to Confined Space after sampling has been conducted and hazards removed.
- d. Post the permit at the opening before allowing entry into a Permit Required Confined Space.
- e. IF a confined space has the atmospheric monitoring requirement waived due to installed ventilation AND a permanent sign is NOT posted, POST a sign at the space stating "CONFINED SPACE - VERIFY VENTILATION IN OPERATION PRIOR TO ENTRY", or similar language.

-END OF SECTION-

4.1.3. Confined Space Entry

- a. ENSURE 4.1.1 and 4.1.2 have been followed prior to proceeding.

CAUTION

All entrants into a confined space are required to be trained per this procedure.

CAUTION

WHEN entering a confined space greater than 6 feet from the entry location, all entrants must wear a full body harness. This is to facilitate timely rescue. The Safety Manager or designee may approve alternate means of rescue in specific circumstances.

- b. NOTIFY MERT (573) 676-8774 and Rescue Team (573) 676-8507 prior to entry AND when entry is complete.
- c. ELIMINATE any conditions that would make it unsafe to remove a cover (e.g., manways, lids, etc.) to a confined space such as ensuring the system is drained and/or depressurized.
- d. IF there is a potential for personnel or objects to fall into or inadvertently enter the opening, BARRICADE the opening by using a physical barrier such as barricade tape, pylons, netting, etc.
- e. IF there are potential atmospheric hazards NOT tested for with the air monitor CONTACT Chemistry for assistance.

NOTE

It is preferred to have a safety observer stationed at the entrance to a non-permit required confined space.

CAUTION

All entrants into a Confined Space must be current on training.

- f. CHECK that all Entrant(s) show qualified in QualMaster (PAT/CSEP).

Step 4.1.3 Cont'd

- g. BEFORE entering any confined space, MONITOR the space for oxygen and flammability (in that order).
 - 1. IF the instrument is so equipped, MONITOR for carbon monoxide and/or hydrogen sulfide.
 - 2. IF there are any known or suspected atmospheric hazards, REQUEST Chemistry sample for other gases.
- h. USE a multigas monitor, approved by Chemistry, and operated according to procedure/manufactures instructions.
- i. REFER to appropriate procedure for the instrument you have AND USE the following guidelines:

NOTE

Gases which are heavier than air will normally pocket at the bottom of a space, but under the right conditions they may stratify at points above the bottom of the space.

- 1. CHECK multi-level sampling is adequately performed.
- 2. Gases travel long distances along floors or other flat surfaces and create pockets at locations far from the source.
- 3. Follow manufactures instructions for sampling with air pumps to ensure accurate samples are obtained. The use of air pumps or tubing increase the time required to obtain a sample.
- 4. Prior to entry each shift, SAMPLE the space thoroughly.
- 5. Continuously MONITOR the space thereafter.
- 6. IF the monitor alarms during initial sampling:
 - Do NOT enter
 - Contact Chemistry
- j. IF the monitor does NOT alarm during the initial sample, TAKE the monitor into the space AND MAINTAIN it on your person to ensure continuous monitoring.

Step 4.1.3 Cont'd**NOTE**

If 2 or more individuals are entering the same space, only 1 person needs to have a monitor if this would provide adequate sampling for everyone in the space.

- k. CHECK that enough individuals have monitors to provide adequate sampling for everyone in the area.
- l. IF an individual in an area experiences dizziness, faintness, nausea, buzzing or ringing in the ears, rapid heartbeat or any other sign of a hazardous atmosphere, immediately EVACUATE all personnel and contact Chemistry.
- m. IF the monitor alarms while in the space, immediately EVACUATE all personnel and CONTACT Chemistry.

-END OF SECTION-

4.2. Permit Required Confined Space Entry Requirements

NOTE

Entrants, Attendants, and the entry supervisor are required to have received Permit Required Confined Space training prior to assuming these positions.

- 4.2.1. Prior to entry, DESIGNATE an entry supervisor.
- 4.2.2. Entry supervisor, PERFORM the following:
 - a. DESIGNATE the Entrant(s) and Attendant(s).
 - b. CHECK that the Attendant(s) and all Entrant(s) show qualified in QualMaster (PAT/CSEP).
 - c. BRIEF the Attendant(s) and Entrant(s) of their duties as listed in this procedure.

NOTE

The duration of the permit can NOT exceed the time required to complete the job.

- d. COMPLETE a CA0160, Permit Required Confined Space Entry Permit CA0160, Permit Required Confined Space Entry Permit AND maintain the valid permit at the Permit Confined Space during the entry.
- e. ENSURE Entrants RECORD atmospheric monitoring results (SAT/UNSAT) on the permit for each shift the entry is occurring.
- f. ENSURE Entrants and Attendants are aware of the hazards associated with the space, including the signs, symptoms, and consequences of the exposures and other hazards in the space.
- g. AFTER Entrants and Attendants have been briefed, RECORD names on the permit.
- h. ENSURE WPA is adequate to protect the Entrants.

Step 4.2.2 Cont'd

- i. PRE-NOTIFY the MERT and Rescue Team each shift that a PRCS entry will be taking place and of the location of the PRCS.
 - NOTIFY the MERT and Rescue Team when the PRCS entry is complete.
- j. ENSURE all entrants and attendants are familiar with the rescue equipment staged for the entry.
- k. ENSURE pre-planned non-entry rescue provisions are established according to the following:
 - 1. Each Entrant use appropriate retrieval equipment (harness, wristlets, etc) with a retrieval line attached.
 - 2. The retrieval line is attached outside the space to a mechanical or fixed point so non-entry rescue can begin as soon as possible.
 - 3. A tripod, block and tackle, or approved retrieval device is required if the space is more than 5 feet deep.

NOTE

If retrieval equipment would increase the overall risk of entry, the retrieval equipment requirement may be waived with the approval of Safety or the Duty Manager.

- 4.2.3. IF use of retrieval equipment is waived, DOCUMENT the justification and approval authority on the permit.

NOTE

The Fire Brigade serves as the Rescue Team, which will be used if non-entry rescue can NOT be performed.

- 4.2.4. During an emergency, CONTACT the Control Room to activate the Fire Brigade.
- 4.2.5. ESTABLISH appropriate communications between:
- a. Attendant and Entrant (may be by radio)
 - b. Attendant and Control Room (telephone, Gaitronics, radio, etc.)
- 4.2.6. At all times during entry AND when Entrants are in the space an Attendant is REQUIRED to be present.

- 4.2.7. An Attendant may monitor more than one space by as long as he can contact the Control Room for emergencies without interfering with his duties for all spaces per this procedure.
- 4.2.8. Entry Supervisor, SIGN the permit, which indicates that all the requirements for entry have been met, before entry is allowed into a confined space.
- 4.2.9. Chemistry, IF atmospheric hazards are involved, SPECIFY ventilation and respiratory protection by posting an Atmospheric Hazard Permit and signing the CA0160, Permit Required Confined Space Entry Permit, indicating approval.
- 4.2.10. Entrants, before entering, SIGN onto the entry log located on the back of the permit.
- 4.2.11. Entrants SIGN out upon exit.
- 4.2.12. When assuming Entry Supervisor or Attendant duties, personnel:
 - a. SIGN onto the entry log in the appropriate section.
 - b. SIGN off upon being relieved or if entry is terminated.
- 4.2.13. During permit required confined space entrances:
 - a. Do NOT attempt to rescue personnel from any confined space unless serving as a part of the rescue team or performing a non-entry rescue.
 - b. IF conditions change or are not consistent with the permit, all personnel EXIT the space.
 - c. IF conditions change or are not consistent with the permit, Entry Supervisor, ENSURE the permit and space is re-evaluated.
 - d. Attendant REMAIN near the confined space in order to accomplish the following:
 - 1. ENSURE no unauthorized personnel enter the space.
 - 2. MAINTAIN an accurate count of personnel in the space by ensuring they have signed the entry log.
 - 3. MAINTAIN verbal communication, may be by radio, with the Entrant to monitor his/her status and to alert for need to evacuate, if necessary.

Step 4.2.13.d Cont'd

4. ORDER an evacuation AND NOTIFY entry supervisor when:
- A condition or work practice NOT allowed by the permit occurs
 - A situation occurs that could endanger the Entrant
 - A behavior is noted that could be caused by the hazard involved
 - The Attendant cannot effectively perform his/her duties

CAUTION

The Attendant SHALL NOT enter the space under any circumstances.

- e. If the Entrant is incapacitated or otherwise unable to exit the space, PERFORM non-entry rescue using the retrieval line.
 - f. If non-entry rescue can NOT be performed by the Attendant, CONTACT the Control Room to activate the fire brigade.
- 4.2.14. Entrant, COMMUNICATE with the Attendant to enable the Attendant to monitor the Entrant's status.
- 4.2.15. Entrant, ALERT Attendant and exit the space when:
- a. Need to evacuate the space is required or an evacuation order is given
 - b. Any signs or symptoms of exposure or danger are noted
 - c. A condition exists that is NOT consistent with the permit
- 4.2.16. The entry supervisor:
- a. ENSURE requirements of this procedure are met.
 - b. TERMINATE entry and re-evaluate if any signs of exposure or danger are noted OR when a condition arises that is NOT consistent with the permit.
 - c. INITIATE a corrective action document if any violations of this procedure occur to include:
 - An unauthorized entry
 - Discovery of a hazard not pre-identified
 - Detection of a condition prohibited by the permit
 - An injury or near miss occurs during entry

4.3. Permit Required Confined Space Close Out

- 4.3.1. IF a Permit Required Confined Space is deposited to a normal confined space, Entry Supervisor, RECORD the bases and justification for depositing on the permit.
- 4.3.2. Entry Supervisor, ENSURE depositing information is made available to each employee who will enter the space.
- 4.3.3. IF a contractor is involved in the entry, the Work Supervisor or Activity Coordinator DEBRIEF the contractor after the closure of the space regarding this procedure and hazards confronted or created in the space during entry.
- 4.3.4. WHEN all Entrants have exited the space AND the space is being secured the Work Supervisor:
 - ENSURE all personnel are signed off of the entry log.
 - ENSURE all covers are reinstalled.
 - ENSURE the DANGER sign is removed.
 - SIGN the permit for closure.
 - ENSURE the permit is removed and forwarded to the Safety Department for review and filing.
- 4.3.5. Safety, REVIEW each closed permit within one year of the closure date to ensure the confined space entry program is adequate and appropriate revisions to the program are made.
 - FORWARD the reviewed permit to the Records Department for processing as a Commercial Record under file code C320.0001.

-END OF SECTION-

5.0 **REFERENCES**

5.1. **Implementing**

- 5.1.1. CA0160, Permit Required Confined Space Entry Permit
- 5.1.2. APA-ZZ-00802 Appendix 1, Callaway Energy Center Confined Space Listing
- 5.1.3. CDP-ZZ-01100, Atmospheric Hazard Control Program
- 5.1.4. CA2994, Callaway Energy Center Danger Sign

5.2. **Developmental**

- 5.2.1. 29 CFR 1910.146, Permit Required Confined Spaces
- 5.2.2. 29 CFR 1910.269(e), Electric Power Generation, Transmission, and Distribution
- 5.2.3. 199800009
- 5.2.4. IER L3-13-16

6.0 **RECORDS**

CA0160, Permit Required Confined Space Entry Permit (C320.001)

7.0 **DEFINITIONS**

- 7.1. **Atmospheric Hazard Permit (AHP):** A document generated by Chemistry personnel that specifies monitoring, engineering controls, and personnel protective equipment requirements for any area, including confined spaces that contain, or have the potential to contain, a hazardous atmosphere.
- 7.2. **Confined Space:**
Has ALL of the following
 - A space that is large enough and configured so a person can enter and perform work.
 - Has limited/restricted means for entrance/exit.
 - Is NOT designed for continuous employee occupancy.
- 7.3. **Entry:** The action by which a person passes through an opening. Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening to the space.

- 7.4. **Hazardous Atmosphere:** An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (escape unaided from the space), injury, or acute illness from one or more of the following causes:
- A flammable gas, vapor, or mist, in excess of 10 percent of its Lower Explosive Limit (LEL).
 - An airborne combustible dust at a concentration that meets or exceeds its LEL.
 - Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
 - An atmospheric concentration of any substance for which a dose or Permissible Exposure Limit (PEL) listed in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances of 29CFR1910 and which could result in employee exposure in excess of its dose or PEL.
- 7.5. **Permit Required Confined Space (PRCS):** A confined space that has one or more of the following characteristics:
- Contains or has the potential to contain a hazardous atmosphere or the atmosphere is likely to change due to use of chemicals, welding, or other evolutions.
 - Contains a material which could engulf an Entrant.
 - Has a shape which could cause a person to be trapped or asphyxiated by inwardly sloping walls or by a floor which slopes downward and tapers to a smaller cross-section.
 - Any unguarded condition which could cause injury or illness to an extent that could prevent someone from exiting the confined space without assistance such as exposed electrical conductors greater than 50 volts, or unprotected moving equipment.
- 7.6. **Permit Required Confined Space Entry Permit:** (CA0160) A written document that is provided to control entry into a Permit Required Confined Space.
- 7.7. **Non-Entry Rescue:** Removal of an entrant without making entry into a confined space, through the use of a retrieval system such as retrieval line, harness, wristlets/anklets (IF approved), lifting device, or other approved equipment.
- 7.8. **Safety Observer:** Designated individual monitoring a non-permit required confined space. The safety observer may have other duties but is monitoring the confined space entry and able to initiate notification of an emergency to the Control Room.

-END OF SECTION-

8.0 SUMMARY OF CHANGES

Page(s)	Section or Step Number	Description
		Incorporates 202202177-001 and 202202426-001
4	3.3.2	Updated Safety Supervisor to say "Safety Manager or designee"
7	4.1.2	Added a NOTE to state "All confined spaces are required to be posted when accessible."
8	4.1.3	Split the NOTE into 2 Cautions. Added sentence about Safety Manager or designee approving alternate means of rescue. Added new Steps 4.1.3.a and 4.1.3.b regarding notifying MERT and Rescue Team.
8	4.1.3.f	Added a NOTE
12	4.2.2.j	Added "staged for the entry"
12	4.2.2.k.3	Added an item for non-entry rescue provisions
16	5.1.4	Added CA2994 as a reference
17	7.7 and 7.8	Added 2 definitions for Non-Entry Rescue and Safety Observer

Attachment 1 Confined Space Flowchart

Sheet 1 of 1

