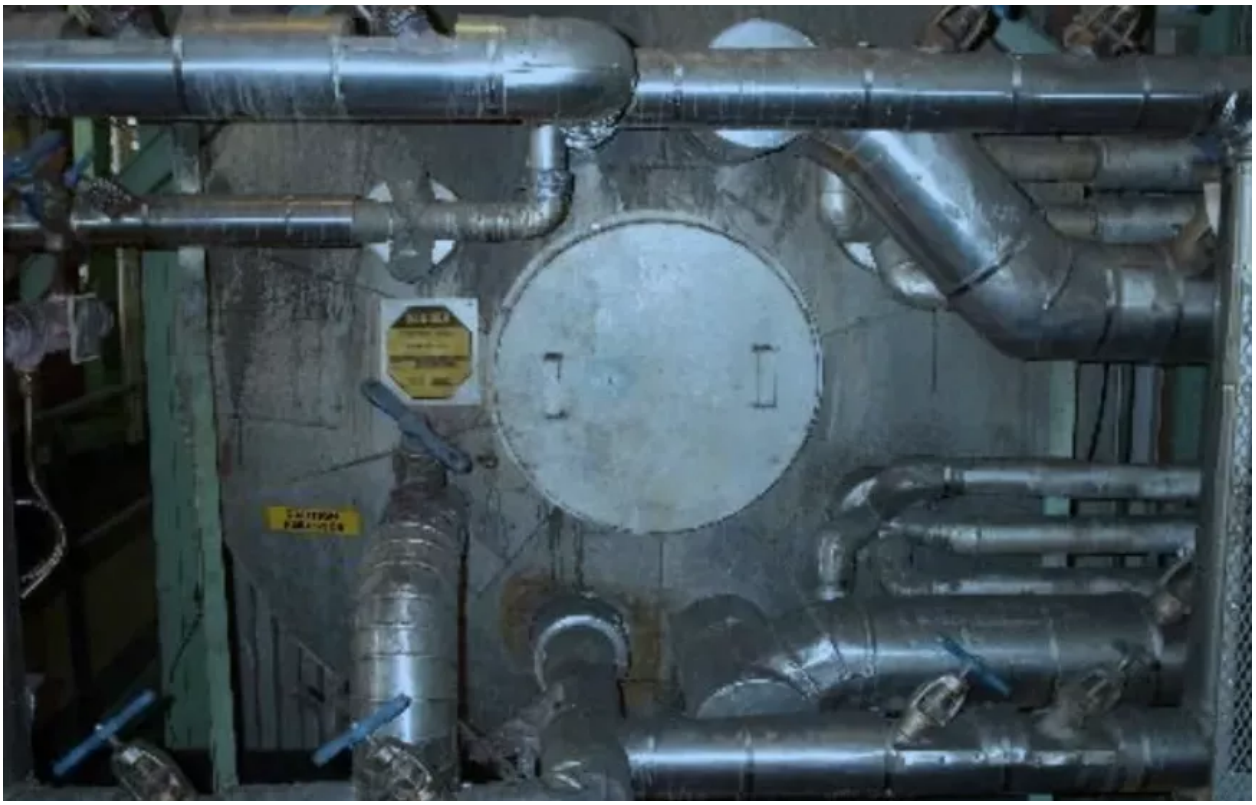
Confined Space Entry Procedures Examples

Confined Space Description & Entry Procedure

This space has been identified as a confined space as defined in the BC Occupational Health and Safety Regulations. The function of the steam drum and internals is to separate the water from the steam generated in the furnace water walls, and to reduce the dissolved solid content of the steam. This separation is performed in 3 stages. The first two in the turbo separators and the last in the steam dryer section in the top of the drum. Separated water is returned to the boiler water in the drum. Steam mixture enters the drum from the furnace water walls. The narrow annulus baffles that form the inner drum-casing make access to the drum internals tight. Also baffles have sharp edges that tend to cut in tight quarters. This confined space covers entry to the boiler steam drum. The steam drum is located on the 13th floor with access from either the North or South manways.



Isolation

"The following isolation points are to be considered as "standard" for isolation and entry to the confined space. The use, deletion or substitution of any of these points is dependent on the requirements for entry to the confined space, e.g., an ID fan may be left in service under conditions where cooling and/or ventilation is required", and must be authorized by the Shift Supervisor in agreement with the Workers Supervisor and Job Lead.

Mills & Fans		
3A Mill	3A1-14	Racked out, locked & tagged
3B Mill	3A1-15	Racked out, locked & tagged
3C Mill	3A1-16	Racked out, locked & tagged
3D Mill	3A1-17	Racked out, locked & tagged
3A PA fan motor	3A1-4	Racked out, locked & tagged
3B PA fan motor	3A1-5	Racked out, locked & tagged
3A FD fan motor	3A1-8	Racked out, locked & tagged
3B FD fan motor	3A1-9	Racked out, locked & tagged
ID Fans		
3A ID fan motor	3A1-6	Racked out, locked & tagged
3B ID fan motor		Racked out, locked & tagged
3A&3B ID fan housing doora		Open & tagged
3A&3B ID fan outlet dampers		Closed & tagged
3A&3B ID fan inlet dampers		Closed, on hand & tagged Air Supply disconnected & tagged
OR		
BR3 stack isolator		In place & tagged
Natural Gas		
Gas Supply Line		Closed, locked & tagged
Spool Section		Removed, locked & tagged
OR		
Gas supply line double block & bleed		Valves blocked, closed, locked & tagged, bleed valves open & tagged
Stn "B" Carbon Injection System		
Injection Train "A" Delivery blower	M-114	Breaker open, locked & tagged
Injection Train "B" Delivery Blower	M-124	Breaker open, locked & tagged
Waterside		
Economizer inlet valves (Main & Bypass)		Closed, locked & tagged
Nitrogen supply MBV		Closed & tagged
PO4 pump motor	3C3-43	Breaker open, locked & tagged
Desuperheating spray MBV		Closed, locked & tagged
Aux. Steam from CRH MBV		Closed, locked & tagged

Economizer Inlet Header Drains		Open & tagged
Water Wall Header Drains		Open & tagged

Qualifications for Workers Entering

No entry into the confined space is to be undertaken unless the following conditions are met:

1. Must be familiar with the station's confined space policy and procedure
2. Must have reviewed station emergency response plan within past year
3. Must be qualified in confined space entry as indicated by successfully completing a confined space entry course or be under the direct supervision of a confined space entry qualified person
4. Must be familiar with the Entry Procedure for space being entered
5. Must have understanding of applicable safe work plan as determined by the project leader
6. Must be signed on to an authorized Work Permit and Confined Space Entry Permit
7. Must complete a document a tailboard session prior to entering confined space
8. Training of the above points must be verified by documentation

Hazard Identification

All known hazards as far as it is reasonably practical shall be identified before entry. Inspection of confined space shall be carried out from man door. All known hazards shall be reviewed and understood by all workers.

Entry/Exit	Low headroom/limited movement Sharp edges on trays
Working Environment	Low headroom/limited movement Sharp edges on trays
Residual Materials	Chemical residual Magnetite
Respiratory Hazards	May be low O2
Temperature	Heat if entering before cooldown
Visibility	No permanent lighting

Gas Testing

Initial Gas Testing:

- Prior to entering the confined space for initial gas monitoring, a hazard assessment will be conducted to assess hazards and appropriate controls utilized (e.g. respiratory, rescue harness)
- Prior to issuing the work permit, the interior of the space will be monitored for gases by probing ahead as the space is entered
- While performing the initial gas monitoring, a Safety Watch will be posted at the confined space entrance

Routine Gas Monitoring:

Routine gas monitoring will normally be conducted from outside the confined space entrance and either:

a) Continuously with a gas monitor in location, or

b) Gas monitoring will be conducted every 2 hours or less before the initial entry of the shift and at least every 3 hours thereafter when the confined space is occupied.

Must test for the following gases:

L.E.L	**Minimum**	**Maximum**
Combustibles	N/A	20%
Oxygen	**Minimum**	**Maximum**
O2	19.5%	23%
Carbon Monoxide	**15 Minutes**	**8 Hours**
CO	N/A	25 ppm
Hydrogen Sulphide	**Minimum**	**Maximum**
H2S	N/A	10 ppm

Special Note: The work permit will specify the gases to be monitored based on the work being performed
Above values are Occupation Exposure Limits (OEL)

Ventilation

The method used will be determined by the potential hazards that arise due to the work to be performed and the design of the confined space. Hazard Assessment will determine the method of ventilation, if any, and will be documented on the Work Permit.

Natural draft by opening of manways or forced ventilation using grounded equipment.

Personal Protective Equipment

The following PPE shall be worn:

- Hard Hats
- Steel Toed Boots
- Eye Protection

The following shall be used based on hazard assessment:

- Face Protection
- Gloves
- Ground Fault Interrupter (GFI) protection on all electrical devices
- Respiratory Protection
- Use of Fall Protection Equipment (Full Body Harness, Lanyard and Basket Choker)

Communication

Workers will use the buddy system while inside the confined space:

- Workers inside the confined space will remain within audible and visual contact with the man watch while inside the confined space. One worker may not remain inside the confined space without another person being in the immediate vicinity to the entrance of the confined space.

Safety Watch:

- The Safety Watch will be qualified in the Confined Space Training Program
- Must review the confined space entry requirements listed in this procedure, the work permit, safe work plan, isolation and equipment specific procedures as determined by the project leader
- The safety Watch will have a method for direct communication with the control room operator.

Rescue Procedure

Confined Space Attendant Procedure:

If a worker is unable to exit a confined space under their own power, and confined rescue is required, complete the following steps:

1. Attempt to evacuate the confined space if hazards present a danger to other entrants.
2. Set your radio tot he emergency channel and inform emergency workers of the emergency situation.
    a. If you cannot transmit on your radio and there is no other radio, instruct another worker to go to the nearest plant phone, call and communicate the information identified in step 3 of this procedure.
    b. If you cannot transmit on your radio and no other worker is present, proceed to the main office and inform reception of the emergency
    c. Communicate pertinent emergency information in step 3 of this procedure (including your radio malfunction), and immediately return to your work area and tending duties.
3. Communicate the following information to emergency personnel:
    a. Your name, position and company employed by
    b. Your work area, confined space nam, location, and doorway
    c. The nature and scale of the emergency
    d. Identify that rescue services are required
4. Remain at the entrance to the confined space to ensure all occupants have left the space and no unauthorized individual enter
5. Await arrival of emergency rescue technicians and, if required, assist in rescue from outside the confined space.

Rescue Technician Horizontal Extraction Procedure

If a worker is unable to exit a confined space under their own power, and a horizontal extraction through the tunnel man way is possible, complete the following steps:

1. Assess situation for immediate hazards
2. Once the area is deemed safe to enter, contact confined space attendant to gather more information of changes in atmosphere and patient conditions
3. If the space is safe to enter, 2 rescue techs are to get patients to exit tunnel and use the collar drag technique to extract patient through the tunnel and then a 2 man carry technique shall be used to carry to safe zone.

Equipment Required:

1. Spine Board
2. Seat Belt Straps
3. Stretcher

Rescue Technician Vertical Extraction Procedure:

If a worker is unable to exit a confined space under their own power, and a vertical extraction is required, complete the following steps:

1. Assess situation for immediate hazards
2. Once the area is deemed safe to enter, contact confined space attendant to gather more information of changes in atmosphere and patient conditions
3. Keep in contact with rescue technicians on patient' condition
4. Have the rescue technicians extract patient to a safe zone and begin ABC's

Issue Date

Authorized by: [Contact.Owner]