

**PURPOSE/APPLICATION**

The purpose of this Safe Work Practice (SWP) is to address the management and control of potentially hazardous energy sources, including vessels, exchangers, pressurized piping, tubing and hoses, electrical, and other energized systems. Safety issues surrounding the isolation of a section of pipe, removing the pipe from service, the safe removal of product and pressure in the pipe section, for the purpose of maintenance, repair, and/or modifications to the pipe, and then returning the pipe to service are covered.

The Operating Authority (Client) is responsible for the isolation, purging, and ensuring there is zero energy in the system before work commences. The Performing Authority is responsible for confirming zero energy, including cathodic protection, before breaking the integrity of the system.

This SWP is a guideline and must be used in conjunction with CPES's Code of Practice (COP) 05 Lock Out – Tag Out, Code of Practice (COP) 03 Confined Space, Code of Practice (COP) 01 Hydrogen Sulphide, Code of Practice (COP) 02 Respiratory Protective Equipment (where applicable), as well as other relevant Code of Practices, Safe Job Procedures, Safe Work Practices, and the Operating Authority's requirements.

**PPE**

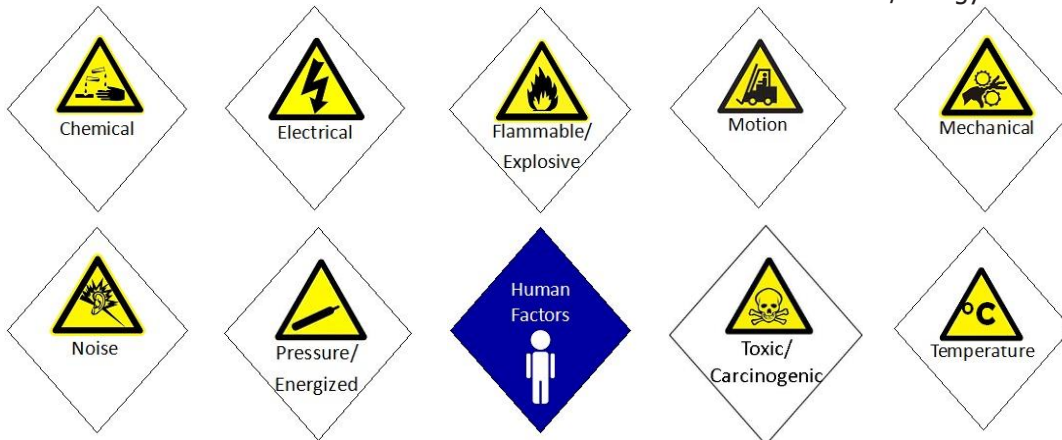
- CPES minimum requirements
- Respiratory Protective Equipment (possibly SABA or SCBA)
- Fire Retardant Clothing
- Disposable FR Tyvek coveralls
- Proper Hand Protection

**TRAINING**

- H<sub>2</sub>S Alive
- Fit Tested
- Confined Space (entry/monitor/rescue)

**HAZARDS & CONCERNS**

- Explosive Environment
- Flammable Environment
- Toxic Environment
- NORMs
- Pyrophoric Material
- Oxygen Deficient Environment
- Uncontrolled release of Pressure/Energy



**SCOPE**

**First Break of Integrity**

The scope of this practice applies to anyone performing activities that involve opening of pipe flanges, uncoupling of threaded pipe fittings or instrumentation (that is mounted with no isolation valves), physically

cutting into process piping or equipment, the opening of process related equipment including electrical and removing process related equipment from service for repairs that have contained or had the potential to contain hazardous materials as defined below.

**Treat the initial line/equipment opening as if hazardous material is present.**

A second break must be treated as a first break when there is the potential of exposure to trapped pressure.

**Hazardous Material**

For the purpose of this procedure the term hazardous material shall mean any substance that is corrosive, toxic, flammable, reactive, represents a biological hazard, organic combustible dust or is under pressure greater than 10psi, is above 120° or below 32° Fahrenheit (Note: This definition also includes plant utilities such as air, nitrogen, and process water when they meet the criteria listed).

**STEPS FOR FIRST BREAK OF INTEGRITY**

#	Task	Sub-Tasks	Person Responsible
1	Conduct Hazard Assessment	1.1 Identify commodity in the system	Supervisor
		1.2 Identify the required controls for the commodity	Supervisor and Workers
		1.3 Determine if work is in a Confined Space	Client Supervisor and Workers
		1.4 Complete a HIAC identifying hazards and controls	Workers to complete Supervisor to review and verify hazards are adequately controlled
2	Prepare for Break	2.1 Verify Safe Work Permit is in place	All workers involved
		2.2 Verify system is Locked Out/Tagged Out (LOTO)	All workers involved
		2.3 Confirm Zero Energy	All workers involved
		2.4 Place personal lock on LOTO box	All workers involved
		2.5 Check all required PPE and emergency equipment is present and in proper functioning order	All workers involved
		2.6 Confirm wind direction, create a restricted zone, plan emergency egress routes, stage rescue personnel with SCBA, bottle watch (if required)	All workers involved
		2.7 Set spill trays in required location(s)	All workers involved
3	Breaking Integrity	3.1 Don required PPE	All workers involved

		3.2 Verify what side of the isolation is to be opened	All workers involved
		3.3 Open system ensuring workers are out of line of fire	All workers involved
		3.4 Monitor atmospheric conditions	All workers involved
		3.5 If safe, remove PPE no longer required	All workers involved
4	Completing Work	4.1 Reduce size of Restricted Zone if atmospheric testing allows	All workers involved
		4.2 Complete scope of work. Ensure all bolt up is torqued in proper sequence and required torque values	All workers involved
		4.3 Have Client verify proper torque values. (Click test or verify readings on Hy-Tork machine/Rad gun	All workers involved, Quality Control Personnel and client

**Blinding or Blanking**

"Blanking or blinding" means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that can withstand the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

An alternative to blanking is the "double-block and bleed".

**Double Block and Bleed**

The double-block and bleed system is made up of either three valves arranged in "T" configuration or a "suitable" single-body valve that contains a Double Piston Effect (DPE) arrangement of seals with a bleed from the internal cavity of the valve. The double-block and bleed allows for the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent (bleed) valve in the line between the two closed valves.

A suitable single-body valve, that meets the true purpose of Double Block and Bleed, is broken down into 2 different classifications - Double Isolation Bleed-1 (DIB-1) and Double Isolation Bleed-2 (DIB-2).

A DIB-1 valve has a DPE seal arrangement that provides protection from all directions that the pressure could be applied.

A DIB-2 provides protection from the outside of the valve pushing inwards from both directions but has a feature that allows the internal cavity of the valve to relieve pressure in a specific direction if over-pressured, making them a flow-directional valve in terms of providing a true double block and bleed protection within a single valve body.

Valves labeled as only "DBB" are done so at the discretion of the manufacturer and may or may not meet the criteria in API-6D for providing protection from all directions.

Blanking or blinding devices are required on piping systems where there may be or are dangers to the workers from the release of energy or other hazardous material into the system.

## **PRECAUTIONS**

Confirm that the materials being used for blanking are adequate for the potential pressures in the system.

### **Blind List**

A blind list identifies all blinds to be installed for the job. The blind list provides:

- Communication within the control room,
- Status of the blinds for the job, and
- Status of blinds through shift change.

It allows confirmation of blinds to install, sign-off for installation, and removal confirmation and sign-off.

### **Isolate and Depressurize System**

- Assist operations with isolation and depressurizing of the system to be blinded.
- Operations must verify that zero pressure in the system.
- Ground the system.

### **Breaking System Integrity (Disassembly of Piping)**

- Follow first open piping and vessel policy.
- Confirm that the flange to be broken is part of the LOTO
- Spill tray and spill containment kit on hand in case of any unknown fluid trapped in the system.
- Keep face and body to the side when breaking flanges in case of any trapped fluids or pressure.
- Always loosen the flange away from your body.

### **Bolt-Up (Installation)**

- Inspect and clean surfaces when blinds/blanks are being installed.
- Inspect all bolt up
  - Is it suitable for reuse?
  - Does the Client require new?
- Torque flanges to specifications.
- Proper gasket rating and placement when installed.
- Monitor for leaks.
- Aligned flanges within acceptable tolerances.

### **A blind list should include the following:**

- Blind number
- Location of gasket
- Blind size
- Installation check (sign off)
- Blind rating
- Removal check (sign off)
- Blind type
- Plant equipment number and name
- Blind thickness
- Lockouts on related electrical and mechanical equipment name
- Location of blind



**GENERAL DOS AND DON'TS**

**THE DOs**

- DO** Confirm that there is Zero Energy in the system.
- DO** Place your lock on the lockbox.
- DO** Ensure there is a Safe Work Permit (SWP) that covers the work being performed.
- DO** Confirm what commodity the system contained.
- DO** Place required emergency equipment prior to starting work.
- DO** Ensure tools have been inspected and are correct for your task.
- DO** Loosen the bolts farthest away from you first.
- DO** Determine wind direction and location of personnel prior to starting.
- DO** Place spill containment in position prior to starting tasks.
- DO** Inspect the blind and gasket to ensure they are the proper rating for the job.
- DO** Inspect flange faces before inserting the gasket and bolting up.

**THE DON'Ts**

- DON'T** Take for granted that there is Zero Energy.
- DON'T** Start without completing a HIAC.
- DON'T** Start the job unless all required documentation, equipment, tools, and personnel are in place.
- DON'T** Assume the atmosphere is safe for human occupancy.

**REFERENCES / ADDITIONAL INFORMATION**

Alberta OHS Code - Part 15 Managing the Control of Hazardous Energy  
 British Columbia OHS Regulation - Part 9 Confined Spaces  
 Saskatchewan OHS Regulation - PART 18 Confined Space Entry, Part 25 Fire and Explosion Hazards  
 Manitoba Workplace Safety and Health Regulation – Part 15 Confined Spaces  
 CPES COP 01 Hydrogen Sulphide  
 CPES COP 02 Respiratory Protection  
 CPES COP 03 Confined Space  
 CPES COP 05 Lock Out -Tag Out (LOTO)  
 CPES SWP 74 Wrench Use

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