

Line Break Procedure

February 2023

1 PURPOSE:

To protect employees from injury caused by the unexpected release of hazardous materials while opening or disconnecting process piping or equipment that cannot be verified as cleared and/or depressurized.

Verified: to confirm by flow of flush liquid or air/nitrogen, open and clear bleeder within four feet of break point or some other method which proves that only residual material may be present.

Other methods of verification may include:

- 1.1 instrumentation specific to the chemical hazard
- 1.2 chemical (color change) indicators
- 1.3 surface temperature of the external piping (indicating trapped liquid)

2 SCOPE:

This procedure pertains to all personnel who participate in line breaking activity. This procedure includes flanged or welded piping as well as process equipment. Consideration will be given to others working downwind, or above and below the line break at an appropriate distance.

3 APPLICATION:

This procedure applies anytime process equipment or piping containing or having previously contained hazardous material is to be opened and cannot be verified as being cleared of **hazardous material**. For the purpose of this procedure the term **hazardous material** shall mean any substance that is corrosive, toxic, flammable, reactive, under pressure greater than 10 psi, above 120° Fahrenheit or at or below 32° Fahrenheit. This procedure also applies to plant utilities such as air, nitrogen, and water when defined as hazardous. This procedure is to be used in conjunction with applicable Plant Policies and Procedures. Each situation must be evaluated individually to employ the appropriate safeguards for the particular job. Respiratory, eye, face, and hand protection may be needed even if the line breaking procedure is not used due to residual material and vapor concentration.

In situations where the system cannot be verified as cleared and/or depressurized due to plugging, Line Breaking protective measures shall be utilized for multiple breaks until the plug is found and eliminated.

Warning – *High temperature and extremely low temperature materials pose additional hazards not addressed by this procedure.*

4 PROCEDURE THE EQUIPMENT OWNER SHALL:

4.1.1 Ensure piping or equipment has been shut down, isolated, blocked, and cleared, per department SOP's and Plant Safety Policies and Procedure.

NOTICE: *Due to design of piping and/or equipment, hazardous material may be present due to low points and plugging. Precautions must be taken when opening or moving these sections.*

4.1.2 Control all job-related energy sources by placing them in a safe condition and locking with an Owner Lock as detailed in (Lockout Procedure). Where possible, drains shall be locked in the open position and rodded with a solid device to insure there is no accumulation of stored product.

4.1.3 List on the "Job Ready" tag:

4.1.3.1 The potential contents of the isolated section. For example: A pipeline in caustic service has been washed and cleared. The potential contents would include caustic.

4.1.3.2 The Personal Protective Equipment requirements to protect affected employee(s) from exposure to or contact by the potential contents of the isolated section. (See attached PPE Matrix for minimum requirements).

4.1.4 Sign and date the "Job Ready" tag.

4.2 The **SUPERVISOR** of the employee(s) performing the work shall:

Identify the line break point for each isolated section that may contain a solid, liquid, or gas **by wrapping the point(s) with line break tape**. If necessary, review job preparations and isolation methods with the Equipment Owner to jointly agree on the location of line break point(s).

4.2.1 **Provide appropriate Job Safety Instruction including:**

4.2.1.1 Scope of work

4.2.1.2 Location of other green tape in the vicinity to reduce confusion.

4.2.1.3 Equipment and methods to be used.

4.2.1.4 PPE requirements

4.2.1.5 Perimeter barricading requirements

4.2.1.6 Shielding or containment requirements to protect nearby equipment, piping, and the environment.

4.2.1.7 Pipe supporting requirements to prevent uncontrolled movement.

4.2.2 Sign and date the "Job Ready" tag indicating acceptance of the job.

4.3 **EMPLOYEES assigned to perform the work shall:**

4.3.1 Participate in the Lockout Procedure as outlined in Safety Procedure 6.

4.3.2 Prior to beginning the work, verify operability of closest safety shower/eye wash station.

4.3.3 Utilize required Personal Protective Equipment on the initial break into an isolated section and any subsequent breaks when it could be reasonable to expect trapped material, such as in the case of a low point in the line. ***Ensure PPE is in good condition and no noticeable defects that would expose you to the hazard.***

4.3.4 Treat all lines as if they are under pressure. Break flanges "down and away" (out of the line of fire). The initial break should be made over containment whenever possible. Be prepared to re-tighten bolts if the line is not clear.

4.3.5 When breaking into an isolated section, the discovery or suspicion of plugged or pressurized equipment or piping requires that work be stopped, and operations personnel be consulted to develop a plan for unplugging and de-pressurizing.

4.3.6 PPE requirements may be downgraded when it has been verified that the risk has been eliminated.

4.3.7 After the successful break has been made the line break tape shall be removed.

4.4 When the equipment repairs, adjustments, etc. are completed, the equipment shall be given back to operation(s) in accordance with Safety Procedure 6 (Lockout Procedure).

Administrative Controls & Personal Protective Requirements

For Line Breaking Procedure Chemical

PPE (Minimum) *

Warning – High temperature (> 140 degrees F) and extremely low temperature (<32 degrees F) materials pose additional hazards not addressed by this procedure.

Chlorine Liquid

Airline Respirator, CPF III, Chemical Gloves and Boots. Standby with “ready to don” Supplied air or SCBA. Verify line is clear before downgrading PPE.

Chlorine Gas

Airline respirator, Chemical Gloves.

Chlorinated Organics

Airline Respirator, CPF III, Chemical Gloves and Boots

Caustic

Goggles and Face Shield, Chemical Slicker Suit/CPF III, Chemical Gloves and Boots.

Acid

Goggles and Face Shield, Chemical Slicker Suit/CPF III, Chemical Gloves and Boots.

Sulfur Chloride

Airline Respirator, CPF III; Chemical Gloves and Boots. All skin must be covered. Standby with “ready to don” Supplied air or SCBA. Verify line is clear before downgrading PPE.

Molten Sulfur

Goggles and Face Shield, Cotton Coverall under CPF III Thermal / Chemical Gloves
Goggles and Face Shield, cotton coveralls under Slicker Suit, Thermal / Chemical Gloves

Steam or Condensate
(unless cool to the touch)

Ethylene, Methane and Hydrogen

Goggles and Face Shield, Fire Retardant Clothing

Air, Nitrogen, or water below 120° F

Goggles

Other Material not listed

Refer to appropriate SDS and Department Supervision

NOTE: *This equipment has been identified as the minimum level of protection required for the initial break into a system. Each situation must be evaluated and addressed based on the particular circumstances. In some cases additional PPE will be needed. For example, when the initial break is made overhead a chemical hood should be used.*

*** Refer to Safety Specifications - PPE - for specific types of approved PPE.**

Revision History

Rev	Rev Date	Rev By	Approved By	Description
1.0	1.3.2022	Shayne Torrans	Shayne Torrans	Initial Procedure Document
1.1	2.7.2023	Shayne Torrans	Shayne Torrans	Format Revision

Approvals:

Policy Owner

Print Name

Date

Signature

Competency Assessment

No.	Questionnaire	C/NYC
Q1		
A1		
Q2		
A2		
Q3		
A3		
Q4		
A4		
Q5		
A5		

Enclosed Attachments	
Risk Assessment	<input checked="" type="checkbox"/>
Environmental Aspect and Impact	<input checked="" type="checkbox"/>
Training and Competency	<input checked="" type="checkbox"/>
Measure and Evaluation Tools	<input checked="" type="checkbox"/>

Competency Checklist

To be filled out by Trainer and signed by Employee, Assessor and Supervisor before being returned to the HSEQT Manager for recording purposes.

Procedure	Competency	Date	Competent YES / NO	Employee Signature

(Please tick appropriate box)

This employee is competent in performing the job.

This employee has not attained the competency level.

*

* *If the employee has not attained all competency levels, the General Manager must assess the action to be taken, provide an extension of training or alternative action as listed below.*

Alternate action to be taken: _____

Signed By	Employee:	_____	Date:	_____
	Trainer:	_____	Date:	_____
	Assessor:	_____	Date:	_____
	Regional Manager:	_____	Date:	_____

Environmental Aspects and Impacts

Identified Environmental Aspects and Impacts

The following table is a summary of the likely environmental aspects and impacts that may be identified during site inspections. The significance of each impact needs to be assessed using the Risk Assessment Model.

Activity	Aspect	Impact
Purchasing & Administrative Work	Consumption of goods	Conservation of natural resources
	Consumption of energy (eg. Electrical equipment and facilities)	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of waste (eg. Paper)	Consumption of space for waste disposal; Habitat loss
Climate Control	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of noise	Disturbance to community; Habitat loss
Cleaning of – offices / vehicles	Storage, use and release of chemicals	Contamination of air, water or soil; Risk to human health
Transport (Fleet vehicles / staff travel)	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Loss of habitat at all stages of generation; Light pollution
	Consumption of goods (eg. Oil)	Consumption of natural resources; Generation of waste; Habitat loss; Biodiversity impacts
	Generation of waste (eg. Oil)	Consumption of space for waste disposal; Potential contamination of water or soil; Habitat loss
	Exhaust emission	Release of greenhouse gases and atmospheric pollution
	Use of dangerous goods (eg. Batteries)	Potential contamination of air, water or soil; Risk to human health
	Generation of noise	Disturbance to community; Habitat degradation
Operations		

Risk Assessment

Risk Assessment // insert name here

Step No: Logical sequence	Sequence of Basic Job Steps documented in the Procedure, Work Instruction and project plans. Break down Job into steps. Each step should be logical and accomplish a major task.	Potential Safety & Environmental Hazards/Impacts at the site of the Job Identify the actual and potential health and safety hazards and the environmental impacts associated with each step of the job.	Risk Rating Refer to the risk matrix or HSEQT.PRO. Risk Mgt	Recommended Corrective Action or Procedure <i>Determine the corrective actions necessary to reduce the risk to as low as reasonably practical (ALARP) refer to HSEQ.PRO.Risk Mgt. The risk must be reduced or controlled to ALARP before work commences.</i> Document who is responsible for implementing the controls to manage each hazard identified.	Risk Rating refer to the risk matrix or HSEQT.PRO.Risk Mgt
1.					
2.					
3.					
4.					
5.					

Audit

Process: insert// Procedure: Insert //			Date:	Audited by:
			Location of Audit:	Area Mgr/Supervisor:
Item	Question	Evidence Sited	Comments	Conformance Score 0,3,5
1.				
2.				
3.				
4.				
5.				
6.				
7.				
AUDITOR'S SIGNATURE:		CONFORMANCE SCORE: / 25		0 – Non-Conformance 3 – Continuous Improvement Opportunity 5 – Total Conformance
SAFETY REP'S SIGNATURE:		CONFORMANCE %:		