HOT BOLT PROCEDURE

V:2023.1

Hot Bolt Procedure

January 2023

1.0 OBJECTIVE, SCOPE AND FREQUENCY

Objective: The objective of this procedure is to clearly define the term "hot-bolting" and its application relative to IPS★ITCS Mechanical work practices.

Scope: This procedure applies to preparing all process equipment for maintenance by "hot bolting" flanges on process vessels, piping, or associated equipment that are considered "in service".

Frequency: As required

2.0 DEFINITIONS

Hot Bolting The common maintenance term used to describe the removal, doping, reinstalling of every other bolt on flanges and the removal of all subsequent bolts on flanges with more than 4 bolts.

Process Equipment A generic term that includes all fixed equipment (vessels, reactors, drums, towers, tanks, etc.), rotating equipment (pumps, compressors, etc.) and piping used at the site which handles process or hazardous materials. Process equipment may include:

1. Process vessels (towers, drums, reactors)
2. Storage tanks
3. Spheres
4. Silos/hoppers
5. Heat Exchangers
6. Boilers, Heaters, and Furnaces
7. Pumps and pump drivers
8. Compressors and Blowers and their drivers
9. Cooling Towers
10. Associated piping systems
11. Associated instruments and analyzers
12. Other specially designed processing equipment

Safe Work Permit A written permit used to authorize work activities for repair, replacement, modification, or construction.

3.0 RESPONSIBILITIES

INDIVIDUAL	RESPONSIBILITIES
Mechanical Supervisor	• Correctly identify which flanges are to be hot bolted as specified by the work order. • Review job to ensure that hot bolting the equipment flanges will not create a situation that will alter the safety of other activities in adjacent areas. • Notify Process Supervisor if work must be stopped due to doubt of proper work requirements or development of an unsafe condition. Contact HSEQT Department if needed. • Ensure that personnel are working on the correct equipment flanges as specified on the Safe Work Permit. • Assure that equipment is depressurized to acceptable pressure for Hot Bolting.
Mechanical Manager	• Ensure that all work activities associated with hot bolting process equipment flanges has been properly planned as specified by the work order. • Ensure that employees are trained in the term "hot bolting".
Mechanical Department Employees	• Ensure that proper PPE requirements are met. • Notify Permit Issuer if work must be stopped due to doubt of proper work requirements or development of an unsafe condition. Contact HSEQT Department if needed.

Hot bolting Procedure

Hot bolting a flange is a common maintenance term used to describe the removal and doping of every other bolt and the removal of the subsequent bolts on flanges with 8 bolts or more. **THIS PRACTICE DOES NOT APPLY TO FLANGES WITH 4 BOLTS.**

Hot bolting of flanges should be performed in order to ease the removal of bolts when working under difficult conditions or when activities present themselves to begin dismantling depressurized equipment prior to being released.

PROCEDURE:

1. Craft personnel hot bolting equipment flanges shall wear the proper PPE as identified on the Work Permit. PPE will be determined by the potential for exposure of the hazard present.
2. A decision amongst the persons performing the job must be made as to which bolts will be loosened, doped and then retightened and which bolts will be removed altogether.
3. The personnel performing the job will first loosening the bolts to remain, one bolt at a time, doping them then reinstalling and tightening until all bolts that are to remain in the flange are prepped.
4. Personnel loosening bolts will always loosen the furthest bolt from them to eliminate line of fire.
5. After Step 3, the remaining bolts can be removed altogether and stored in a location out of the work area. The flange has now been "hot bolted".

Revision History

Rev	Rev Date	Rev By	Approved By	Description
1.0	1/3/2022	Shayne Torrans	Shayne Torrans	Initial Procedure
1.1	11/23/2022	Shayne Torrans	Shayne Torrans	Format Revision

Approvals:

Procedure 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	☑
Environmental Aspect and Impact	☑
Training and Competency	☑
Measure and Evaluation Tools	☑

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** ***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 rediced or controlled to ALARP before work commences.*** 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: SAFETY REP'S SIGNATURE:	CONFORMANCE SCORE: / 25 CONFORMANCE %:	0 – Non-Conformance 3 – Continuous Improvement Opportunity 5 – Total Conformance