**WORK INSTRUCTIONS FOR FLARE STACK ISOLATION OF BF1**

Responsibility: Shift Superintendent

Criteria: Safe isolation of flare stack

**Identified Hazards:**

1. BF Gas poisoning

2. Failure to keep relief valves open

3. Water seal failure due to pressurizing of line.

4. Unintentional dropping of water seal due to human error.

5. Miscommunication between engineers

6. Fall of person and getting hurt while running in hurry

7. Fire & explosion

8. Not adhering to work instruction/use of PPE

9. Improper house keeping

10. Inadequate local lighting

11. LOTO system not being followed

Significant Aspect:

1. Emission of BFG

2. Usage of water

ISOLATION OF FURNACE 1 FLARE STACK FOR REPARING OF BURNER WITH OR WITHOUT BF1 SHUT DOWN

1. Unauthorized operation or repair of any equipment is a punishable offence.

2. Ensure BF2 flare stack valve is in Auto mode with line pressure setting at 850mm~950mmwc and burner ignition working

3. Ensure GEL stack valve is in auto mode with line pressure setting at 800~900mmwc and burner ignition working

4. Inform GEL about drop in gas line pressure.

5. Wind to be reduced if any of the flare stack is not flaring which can happen in case GEL trips, or sudden isolation of stoves

6. Ensure water sealing of gas line at following

i). BF1 flare stack both water seal of bypass gas line, and lockout pad is put around the water sealing valve wheel and locked and ensure slight continuous overflow of water from the seal

ii). BF1 flare stack main water seal and lockout pad are put around the water sealing valve wheel and locked and ensure slight continuous overflow of water from the seal.

iii) Additional water seal to GEL gas line and lockout pad is put around the water sealing valve wheel and locked and ensure slight continuous overflow of water from the seal.

Ensure CO monitor is used while water sealing gas line

7. Ensure overflow of water is maintained from all seals

8. Ensure all service departments require to work on the flare stack put their lock on all the lockout pad require to be kept water sealed in course of the job and retain the key with self-till completion of the job.

9. Ensure all water seal to be lock out by service department should be mentioned in the work permit.

10. Ensure gas line pressure on PID control is displaying Zero after water sealing.

11. Ensure flare stack valve (Actuator) is kept closed after water sealing in manual mode including bypass valve, before sending any person on top (flare stack).

11. Ensure 80 NB gas line to burner is kept closed

12. Ensure BF1 flare stack is steam purged till conspicuous steam is noticed from top of the flare stack

13. Ensure steam purging valve to flare stack gas line is kept close.

14. Electrical supply to the burner is isolated before going on top of the flare stack.

15. Ensure that there is no surge in the gas line at water seals and keep one man with walkie talky to have constant watch over the overflow from the seals till people are working at top of the flare stack and in case of water seal is broken people working on top to be alerted to move down.

16. In case of any gas leakage due to breaking of water seal reduce the wind volume immediately. Priority should be to bring down the people from top safely.

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| Prepared By:  Head – Production PID I | Reviewed & Issued By:  Management Representative | Approved By:  Head – Pig Iron Division |
| Signature: | Signature: | Signature: |
| Date: 15**.07.2022** | Date: **15.07.2022** | Date: **15.07.2022** |

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| **Revision date** | **Manual Section ref. and para** | **Brief details of revision** | **New Revision No.** |
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