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|  | **VEDANTA LIMITED –**  **VALUE ADDED BUSINESS** | **Format No.:** | **FRMT/MR/10** |
| **INTEGRATED MANAGEMENT SYSTEM** | **Revision Date:** | **10.07.2023** |
| **HAZARD IDENTIFICATION** | **Revision No.:** | **03** |
| **Page No.:** | **1 of 1** |

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| **Departmental Use Only** | |
| **Revision No: 02** | **Unit: PID1** |
| **Revision Date: 10.07.2023** | **Dept.: Production** |

A. Work activity information

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| **Sr.No.** | **Details** | **Remark** |
| 1) | Task being carried out, their duration and Frequency: | Shutdown and startup of furnace  Once in a month in each furnace and as and when required |
| 2) | Location (s) where the work is carried out. | BF Area |
| 3) | Who normally/occasionally carried out the task? | Company employees, Contractor Employees & supervisors |
| 4) | Who else may be affected by the work (For example visitors, subcontractors? the public) | Visitors |
| 5) | a) Has the personnel trained for performing the task  b) Any special training required | Yes  No |
| 6) | Is the written systems of work mandatory? If yes state, the procedure no. | Yes,  VL/IMS/PID1/PROD/WI/06A, B, C, D |
| 7) | Is the work permit required for the task? | No |
| 8) | Plant and machinery that may be used:  Eg: crusher, conveyor, crane, heavy earthing equipment, Truck etc, | All BF Accessories |
| 9) | Any electrically operated hand tools are used | NIL |
| 10) | Manufacturers or supplier’s instructions for operation and maintenance plant machinery and powered hand tools are available or not: | NIL |
| 11) | Chain block, tools and shackles such as wire rope, hydraulic jack etc are used. | No |
| 12) | What materials are handled? Size, shape, surface character and weight of materials that may be handled: | Hand shovel/Ghamela & cleaning equipment, each person not carrying more than 15 Kg of weight. |
| 13) | Is the material is required to be moved by hand. If yes Distance and heights of the place where materials have to move by hand. | 22 meters |
| 14) | Services used Eg: compressed air, oxygen, acetylene,  LPG gas, hydraulic oil, welding electrode for welding | NIL |
| 15) | Physical form of substances encountered during the work (For example fume, gas, vapour, liquid, dust/powder, solid): | Dust/Powder |
| 16) | Content and recommendations of safety data sheets relating to substances used or encountered:  (This is applicable in case of chemical material) | NIL |
| 17) | a) Relevant acts, regulations and standards relating to the work being done, the plant and machinery used, and the materials used or encountered:  b) Is the activity is reviewed for compliance to statutory requirement | Factory Act  Yes |
| 18) | What is the data (s) required to be monitored during the activity and the frequency of monitoring? | NIL |
| 19) | Any information available from within and outside the organization on incident, accident and ill health experience associated with the work being done, equipment and substances used: | Yes |

2. From the above activity information hazards are to be identified and recorded below using Appendix 'A' of SP/41

**Hazards identified**

1. Fall of a person
2. Mechanical impact
3. Contact with graphite dust
4. Fire & Explosion in the gas line
5. Electric shock
6. 6 BF Gas leakages (gas poisoning)
7. Contact with flame
8. Contact with hot metal/slag
9. Contact with hot water
10. Human Behavior -Nonuse of PPE
11. Human Behavior -Improper house keeping
12. Inadequate local lighting
13. Human Behavior -Not using CO detector
14. Human Behavior -Working in a hurry and getting hurt
15. Burns due to electric shock
16. Dust inhalation
17. Flare stack drip pot failure
18. Contact with pulverized coal
19. Contact with hot surface
20. Contact with hot coke
21. Contact with compressed air
22. Human Behavior -SOP violation
23. Human Behavior -Not concentrating while operating machine
24. Human Behavior -Ignorance/casual approach
25. Gas leakage after startup due to improper cooler/tuyere/cooler holder setting
26. 27.03.2004 While taking a trial of water line lot water got accumulated in the dust catcher & Glendon area.
27. 23.03.2004, There was a gas leakage in the Glendon area about 800ppm and 100-360ppm in the control room.
28. On 28.07.2006 during startup of bf1 after opening the tuyeres, fitter was closing the peep hole flanges & suddenly there was a flame from tuyere & the operator passing nearby got burnt his face.
29. On 06.02.2007 there was an electric shock from welding electrode-Aniruddh Surwade.
30. on 4-02-14 It was observed that the gas leakage at tuyere cooler no: 5 ‘s seating had increased. Shutdown was planned at: 14:45 hrs to arrest leakage.

Root Cause: Dislocation of cooler / supporting bricks due to erosion refractory.

Contributory cause:

Shutdown was taken for BF2 gunning from 10th Jan 2014 to 16th Jan 2014 and was water jet washed from inside during which cooler may have got loose in seating area. Corrective and preventive actions:

• Visual inspection during planned shutdown while replacing tuyeres by prod.

• Replace tuyer cooler holder in every relining.

• Exploring the possibility of rechecking the design at seating area

1. During BF2 shutdown (21.08.2015) it was observed by Technician Mr. Vatu Kotkar that Furnace Top at Upper bell platform the gate was not locked
2. On 23.04.2016 at around 12:00 hrs After BF2 start-up BF2 Flare stack drip pot gave away. Immediately drip pot recharged with makeup water, there was no gas poisoning to any person or damage to any equipment.

Cause:

Set point of flare stack control valve was given higher value for closing which restricted the gas flow and resulted in increase in gas line pressure.

Contributory cause:

Confusion is due to open and close logic

Capa:

1.Gas line pressure to be controlled in manual till the gas line is taken in line and the gas line pressure stabilizes.

2. Refresher training to control room engineers.

3. Present logic is to be changed. (100% means full close and 0 means full open).

1. On 27 April 2016 after taking shutdown of BF1 it was observed that on furnace top few big pieces of coke had fallen at cast house staircase area. Soon after that cleaning of safety net under CB-5 belt was going on without barricading the area. The barrication was done after that.

Causes: No barrication below working area

Barrication to be ensured with proper supervision.

1. On 17.02.2020 near about 8.30 am, while BF#1 was on shutdown process excess gas observed from BF#1 bleeder for around 4-5 mints. which was higher than normal shutdown.
2. On 07.09.2020 at around 10:30 hrs at BF1 fire observed at F/C top, Wind was minimum at this time. No one was injured and no damage to property.

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| **Prepared By:** | **Reviewed By:** |
| **Signature:** | **Signature:** |
| **Review Date: 10.07.2023** | **Review Date: 10.07.2023** |