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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: 01** | **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: | Abnormalities in BF Operation |
| 2) | Location (s) where the work is carried out. | BF Area |
| 3) | Who normally/occasionally carried out the task? | Company Employees, Contractor’s lab ours & 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. | VL/IMS/PID I/PROD/WI/10 |
| 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 | No |
| 10) | Manufacturers or supplier’s instructions for operation and maintenance plant machinery and powered hand tools are available or not: | Yes |
| 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: | Lumpy  10-30mm & 20-60mm |
| 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. | NIL |
| 14) | Services used Eg: compressed air, oxygen, acetylene,  LPG gas, hydraulic oil, welding electrode for welding | Hot blast |
| 15) | Physical form of substances encountered during the work (For example fume, gas, vapour, liquid, dust/powder, solid): | Gas & solid particle |
| 16) | Content and recommendations of safety data sheets relating to substances used or encountered:  (This is applicable in case of chemical material) | NA |
| 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

1. 26.01.2004, hot splashed over the people around the area -Sudhakar Kundargi
2. 02.11.2003, hot coke was about to fall on the personnel moving towards hydro pack
3. 15.11.2004 saturator drip pot water seal broke & water splashed all over at 23.55hrs. -Roshan Naik
4. 11.09.2005, Explosion in the GCS duct at 08.05 hrs.
5. 12.09.2005, At 13.15 hrs. Furnace took a major slip.
6. On 28.11.2005, at 00.30 hrs hot coke entered into compressor room and caught fire. (Cables, wooden boxes & instruments were burnt).
7. On 04.01.2007 at 18.20 hrs there was a flame at furnace top due to oil leakage from the hydraulic line
8. on 08th Aug 2014 At around 7:30 hrs after closing last cast of 3rd shift/c took a slip due to which coke spread from bleeders.one of the coke piece hits the right hand of M/G operator Mr. Anil Sinari causing slight burn injury to his hand. He was sent to dispensary for treatment. He resumed on duty after first aid.
9. On 22nd March, BF1 was hanging, and it took a slip of its own resulting in opening of bleeders and coke showering took place. There was No injury to any person and no damage to the property

Causes:

1. High CO and CO/CO2 ratio, one uptake high top gas temperature, etc are symptoms of Channeling effect of furnace for which sufficient counter measures were not taken in second shift and night shift.

Contributory cause:

Previous CAPA points to control coke shower is not yet implemented

1. Operations to review process control to ensure sufficient competencies and resources are available to address basic furnace irregularities.

2. Previous CAPA points to control coke shower to be implemented immediately.

3. In addition possibilities of fixing cage in the uptake just below bleeder valve to be explored to prevent coke shower from bleeder valve.

1. At 11:50 hrs Mr. Deepak Kumar production Engineer met with a hand injury. His right hand got cut injury below the thump finger while pushing the door of Mud gun power pack. First aid given at our Dispensary and then send to GMC and Mapusa Hospital for further treatment. Other details of the incident to be investigated.

Causes: Due to emergency & Panic situation in cast house IP pushed the door of Mud gun power pack for mitigation measures.

CAPA: 1. Procedure for mitigation measures should be in place in case of abnormal activities.

2. Window span to be made of toughened glass.

3. Possibility of providing peeping glass block on the door.

4. Emergency stop button of Drill machine & Mudgun to be provided in control room.

5 Revision of emergency preparedness procedure & adding such scenario in one of the already identified emergency.

1. 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.

Root Cause: Fire at bell portion was caused by spark coming up from pneumatic stock rod opening. The spark caught the bfg and resulted in fire.

CAPA:

1. Fire was extinguished using water sprays provided at upper bell platform.
2. Design and implementation of a solution to prevent spark from stock rod (side guard to be fixed for rotary hopper near stock rod).
3. Operation SOP to be revised to incorporate continuous supply of steam between bells till wind and furnace is normalized.
4. On 19/03/2022 at 4:30hrs BF2 took Auto slip with coke shower from bleeders, observed fire at several places, team immediately extinguished fire at all location viz stove area, bf2 flare stack area, Bag house area, cooling tower top area.

Root Cause : Internal slip in the furnace after revival

CAPA:

1.immediately wind was reduced to control the sudden outflow of gases.

2.Possibility of installing Bleeder valve on dust catcher (Just like BF 3 )to be explored.

**Hazards identified**

1. Contact with hot material causing burns
2. BF Gas leakage
3. Fire & explosion
4. Contact with hot water causing burns
5. Contact with hot cake
6. Fire in the compressor room
7. Human Behavior -Nonuse of PPE
8. Human Behavior -Improper house keeping
9. Inadequate local lighting
10. Human Behavior -Running in hurry to attend to the problem soon but getting hurt

11 Spillage of hot coke from bleeder

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