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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: 15.07.2023** | **Dept.: Production** |

A. Work activity information

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| **Sr.No.** | **Details** | **Remark** |
| 1) | Task being carried out, their duration and Frequency: | Mudgun machine operation  02 min.  12 times a day |
| 2) | Location (s) where the work is carried out. | BF-Cast house |
| 3) | Who normally/occasionally carried out the task? | Company employees & supervisors |
| 4) | Who else may be affected by the work (For example visitors, subcontractors? the public) | Maint. Staff , contract labours & 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/PID1/PROD/WI/08 B |
| 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, | Mudgun |
| 9) | Any electrically operated hand tools are used | Yes |
| 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: | Liquid metal & slag |
| 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 | NIL |
| 15) | Physical form of substances encountered during the work (For example fume, gas, vapour, liquid, dust/powder, solid): | Liquid metal & slag |
| 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? | Dry and wet bulb temperature of the  Working environment |
| 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. While closing of tapping, just after full barrel clay was pushed the mudgun forward injection hose gave way at the crimped portion of the hose resulting in a huge flame of the hydraulic oil. The pump was stopped instantly. The tapping operator was at the same time very next to the area clearing the runner & skimmer plate hole -30.04.2009.
2. On 19.10.2009 at around 01:10 am in BF2, during closing of the first cast of “C” shift, mud gun latch cylinder hose got punctured & oil spilled in the main runner resulting in a huge flame. This flame traveled from main runner into the mud gun control room, located about 3m above the cast house floor. This flame caused superficial burn injury to Mr. Sandip Naik, who was operating the mud gun.
3. On 18.7.10 at around 11.30 am, mudgun nozzle bolts gas cutting was going on during BF1 shutdown. 2 bolts were gas cut and when 3rd bolt cutting was over, the mudgun nozzle moved ahead by around 20 mm and mudgun clay started burning with flame.
4. Recently at KCM – KIBU-1 Shaft, a contract employee met with an accident and succumbed, on 24th March-2014 at 23.00 hrs, victim (Drill Rig Operator) along with his colleague are engaged in drilling of slyping holes in the 3700mN connection crosscut to ventilation drive using boomer number 282-01. In the process of drilling, the machine has developed an oil leak on the percussion. In order to verify the oil leak, victim went in front of the machine to show the artisan where the leak was, during the process inadvertently the Lock Out Cylinder broke, causing the boom to swing which struck victim’s chest and injured him Fatally. (Investigation is in process).

It is advised to all sites that they shall review their existing practices to ensure the following:

1. Never allow personnel to stand in the area between the drilling compartment and the zone being drilled.

2. A person can only go and examine the drilling zone when the machine is switched off and the operator had permitted him /her.

3. Process of conducting periodic “Task Audits” to understand the deviations against SOP’s

1. On 01.06.2020 In Bf1 (~19:10 hrs) during Mud-gun trial before opening cast, injection forward button when pressed, it got stuck. Emergency stop button was pressed to stop hydraulic pump. But by the time piston had moved full forward and whole mud gun clay got pushed out (as barrel was full).

Root Cause: Foreign particles getting stuck between pushbutton plunger and the pushbutton body thereby resulted in pushbutton not retracting to original position.

Contributory Cause:

1. Operating station exposed to dust in absence of cabin door

CAPA:

Mudgun/drill machine authorization chart to be updated

**Hazards identified**

1. Contact with hot metal& slag
2. Fall of Person
3. Impact with mudgun
4. Hose pipe bursting, puncture & fire
5. Contact with hot mudgun clay
6. Trapping of hand or figures
7. Human Behavior -Nonuse of PPE &WI
8. Human Behavior -Improper house keeping
9. Inadequate local lighting
10. Human Behavior -Touching of mudgun clay in hot barrel
11. Stoppage of mudgun operation during closing of cast due to failure of hydraulic hoses
12. Gas formation in mudgun barrel due to jam nozzle and not retracting piston back.
13. Slip due to oil leakage

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