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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.:** | **02** |
| **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: | Loading of pigs, slag, debris & transportation  Continuous |
| 2) | Location (s) where the work is carried out. | BF Area& up to dispatch |
| 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. | Yes.  VL/IMS/PID1/PROD/WI/15 |
| 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, | Wheel loaders & trucks |
| 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: | Pyramid, irregular & granular |
| 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): | Pigs, slag & debris |
| 16) | Content and recommendations of safety data sheets relating to substances used or encountered:  (This is applicable in case of chemical material) | Yes |
| 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  Motor vehicle 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. 25.06.2002, wheel loader tyre got burst and the tyre came out from the wheel assembly
2. 22.05.2003, while loading the debris with the help of wheel loader hot dust fell on the hands of a wheel loader operator
3. 21.08.2003, wheel loader rear end lifted up.
4. On 30.01.06 at 9.45hrs, Tipper No T-8731 got unbalanced & vehicle got tilted towards cleaner side
5. 04.10.2003, truck loaded with granulated slag fell down from the road in front mech. workshop to the gas holder level (05-meter height)
6. 21.04.2004, after unloading the pigs the operator of the truck drove the vehicle with its body in a raised condition and damaged the overhead cable &pole
7. 26.07.2004 at 10.30 hrs. truck no8731 was reversed without operating the reverse horn, people working nearby area have just missed an accident (between PCM-4 &PCM-3)
8. 17.07.2004, the truck no 8731 was on its way to overhead tank the cleaner side door opened whist the driver was negotiating the turn.
9. 24.01.2005, the truck no GA-02 T 9937 went off the road and fell down
10. 07.03.2005, truck damage the railway gate near boiler after unloading the slag in the slag dryer area
11. 30.08.2005, The glass of a truck damaged as the chips from PCM4 hit the glass
12. On 22.09.2005, PP&B truck mirror got damaged as the metal chip from PCM-3 hit the mirror
13. On 30.01.06 at 9.45hrs, Tipper No T-8731 got unbalanced & vehicle got tilted towards cleaner side
14. Collision of trucks near bughouse area, while negotiating the curve. (Truck no 8732 & 6200)
15. On 18.01.2007 truck no 8732 while passing over the slag tunnel the wheels got stuck in the tunnel and the concrete cover collapsed in the tunnel.
16. On 18.01.2007 While loading the pigs of PCM1 by magnetic crane magnet came on its own and banged the truck hold
17. On 23.04.07 while loading pigs from PCM3 into the tipper metal chip from PCM 4 discharge end hit the front side of the tipper which damages the glass screen.
18. On 14.07.2008 at around 5:30hrs pig shifting wheel loader hit walkway (bridge) on drainage leading to slag dumping area. & Boiler areas on slag drier from gas holder. As per wheel loader operator he took wheel loader in one side to save cats which came in front of the tires.
19. On 15.12.09 at around 5:45 hrs., after unloading the slag at slag drier plant, truck driver found that brake has failed, stopped & parked the truck. There was no damage to any machine or injury to men.
20. When PCM 4 pouring was on, one small size pig flung over the chute and hit driver side rear view mirror of the truck Number GA-01 9978 placed for loading. Rear view mirror shattered, and front wind shield developed slight cracks. No person injured. -3.12.10
21. On 23.02.2011, at 02:40 hrs. small size metal chip flew over and hit front glass of truck no.9986 while placing for loading of pigs from PCM 2 and front wind shield developed cracks.
22. On 09.04.2011, at around 09.30 am while unloading the slag at new slag storage area, hot boulder present in the granulated slag come in contact with the dry grass spread resulted in fire. It was the driver of the truck 9986 Mr. Munna who first saw the fire and alerted the PCM in charge Mr. Arun. Immediately Mr. Arun rushed to the site with a fire extinguisher and extinguished immediately.
23. On 04-06-2014, in first shift at about 11:30 hrs, it was reported 3 Hyva dumper- front mud guard were found damaged. The above incident took place in front of the slag dryer bunkers.
24. At 01:45 hrs in 3rd shift during side casting of slag by wheel loader, left hand side front tyre got burst and came out of drum/disc. Mr. Ebrahim was the wheel loader operator. No harm/injury to anyone.
25. On 03 March 2020 at around 15:00hours, S.S.&Co. Wheel Loader bearing No. GA05D7197 Operator name: Mannu Singh engaged in shifting Ladle Debris at skull yard, in the process while reversing its tyre went over skull piece which got entangled with its housing and oil pipe has been slightly damaged. No injury to anyone.
26. On 09.08.2020 at 23:45 hr. Mr Rupesh Naik (Bhavna earth mover driver) engaged with truck GA05T1669 for shifting slag from BF2 to Jetty dumping yard shed. While unloading slag inside the shed, lifted dump body of the truck got touched to the supporting column of the shed & dump body of the truck got minor damaged. No injury to anyone. Alcohol test conducted, found negative.
27. On 22.12.2020 in G shift it was found that the emergency exit door of ladle tilter panel room was in a broken condition.

Cause: Panel room emergency door got damaged due to hitting of wheel loader while shifting of skulls particularly which was having sharp edge and big size. It was also noted that debris was protruding out of wheel loader bucket.

CAPA: 1. While loading of Debris by wheel loader ensure that all the debris not protruding outside the bucket. If any excess debris found, then same to be removed from wheel loader manually

2. Loading of PCM 2 side debris in wheel loader to be done under supervision of company staff.

1. On 02.07.2021, Mr. Devnarayan (Bhavana) with Vehicle No GA05T1669 was carrying pigs to the dispatch yard. On the way to dispatch yard near bhavana workshop due to upward gradient he tried to shift vehicle in the higher range gear but couldn’t be able to engage. Meanwhile vehicle dint stopped on the application of brake and started slowly coming backward. Vehicle moved over left side of the road bump and stopped. Convex mirror which was fitted on the roadside got damaged by hitting dump body of the vehicle. No injury to anyone. Alcohol check of the driver is found negative.

Cause: 1. Misjudgement on part of driver to timely changing of higher power gear to take load before the climb.

2. Air pressure was not building in brake one of the air tank due to minor leakage in airline.

3. Gear engagement failed when higher power gear was to be engaged.

Contributory Cause:

1. Uneven Road surface on the climb.

2. Loose pigs fallen on roads.

CAPA: 1. Defensive driving re-training to the driver.

2. Stringent check-ups from service providers on critical equipment’s such as breaks, hydraulics and gear boxes.

3. Road levelling to be done as soon as observed.

4. Fallen loose pigs to be removed immediately

1. On 04/08/2021 at around 23:00hrs M/s Bhawana Earthmovers, truck No.GA -04 T-8684 was carrying granulated slag from BF2 to Jayanthi yard by pig shifting road. Near BF2 raw material yard, road was blocked due to raw material trucks. While taking reverse, rear wheel of the truck went outside the road due to which truck got imbalanced and toppled on the road. Minor injury to truck driver Mr. Ram Swaroop to his right hand. First aid given. Checked for alcohol. Found negative. He was advised to take rest. Battery is disconnected and area is barricaded.

Root Cause:

Misjudgement & reversing loaded truck.

Contributing Factors:

1. Traffic Jam

2. No barriers/fencing along the edges to prevent the trucks going off roads

3. Hastiness on the part of driver to reach his destination

CAPA: Disciplinary action to be taken against the driver

1. On 15.11.2021 at around 22:20 hrs, Slag shifting Hyva bearing no. GAO5T1669 driver Mr. Tutu Bana (Bhavana Contractor) while heading towards slag dryer yard to unload slag at turn truck came down and got stuck in storm drain damaging handrail. Alcohol test done found negative. No injury to any person.

Cause:

Driver was not attentive & try to shift gear on turn leading to incidence

CAPA:

1. Refresher training to be provided to drivers on daily/weekly basis.

2. NOGO checklist are to be filled on shift basis & vehicle inspection to be done by site supervisor.

3. Maintenance schedule to be documented & Area in charge must signed for it.

4. No driver deployment to be done without work authorization card.

5. Management Policy for fitness of trucks to be revisited for trucks more than 10 years.

6. All machinery should be used with one make, which will offer driving comfort for drivers.

**Hazards identified**

1. Contact with Hot particle
2. Fall of truck or Wheel loader
3. Bursting of tyre
4. Contact with graphite dust
5. Mechanical: impact on light pole
6. Electric shock
7. Fall of a person from the truck
8. Fire
9. Impact of moving machineries to static structures
10. Hitting by metal chips / small sized pigs
11. Impact of moving machinery (Truck & wheel loaders)
12. Contact with Hot water
13. Fall of a person in the pit
14. Impact by grab bucket
15. Contact with graphite dust
16. Human Behavior -Nonuse of PPE
17. Human Behavior -Improper house keeping
18. Inadequate local lighting
19. Improper handling of slag and debris which could lead to spillage
20. Tripping of truck due to overloading
21. Contact with Hot particle/ Hot water
22. Inhalation of dust
23. Break failure of truck
24. Fire due to contact of dry grass with hot un granulated slag boulder
25. Impact of truck to the gate
26. Contact with metal chips
27. Nonstandard barrication at the site
28. BF gas poisoning

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