**WORK INSTRUCTIONS FOR SALAMANDER TAPPING**

**Responsibility**: HOD Production

**Identified Hazards:**

1. Fall of a person
2. Fire & Explosion in the gas line
3. BF Gas inhalation
4. Contact with hot coke
5. Contact with dust
6. Fall of material from top
7. No control of opening the water valve
8. Nonuse of PPE
9. Improper house keeping
10. Inadequate local lighting
11. Doing the job in hurry

**Significant Aspect**:

1. Generation of fumes
2. Leakage of BFG
3. Fire & Explosion
4. Water consumption
5. All personnel involved in the Salamander tapping should wear proper mandatory PPE and all the activities are to be carried out as per the instructions by production HOD.
6. Once the salamander tapping is planned, preliminary shutdown to be taken and quenching water header to be connected to the furnace top platform through flexible hoses.
7. The point of salamander drilling to be marked and the area to be protected with steel plate. (With canopy)
8. Before shell plate is cut for drilling purpose center to be marked as per drawing.
9. The launder to be made and the drilling machine to be installed as per the instruction and the launder to be made with a runner mass & heated.
10. Shutdown burden to be started as per the instruction and ensure the availability of steam in the header the time of coke charging. Top gas temperature to be controlled with water spray.
11. Ensure there is no water leakage from tuyere & tuyere coolers.
12. Salamander drilling to be started as per the instruction. The temperature and corresponding drill length

to be recorded.

1. Salamander drilling to be done at length around 50-100 mm each time and record the temperature to avoid

Sudden contact of hot metal. Healthiness of drilling bit tip to be done by visual inspection. If damaged/red hot, drill bit to be changed

1. Emergency launder area has to be completely cleaned and a bed of sand to be made, also ensure that there is no water leakage in the area to avoid any explosion.

Drilling length and temp. to be monitored continuously. After certain drill length and temp oxy lancing to be done to open salamander tapping. No un-necessary gathering at salamander area should be there. Operator must be wearing all required mandatory PPE’s all the time during salamander tapping. Salamander tapping to be monitored continuously once metal has started coming out and till end of tapping. Lancing can be done if metal/slag flow reduces.

1. Ensure that the shutdown is taken as per the procedure after salamander tapping and the gas line is blanked with dummy flange.
2. Furnace cast house area and furnace top entry to be restricted. In case of emergency, person should carry gas detector with prior permission from HOD production.
3. Coke quenching operation to be carried out as per the instruction by HOD Production and the quenching rate to controlled judiciously as per the procedure to avoid explosion. Before doing quenching operation ensure additional spray nozzle provided for quenching operation are placed in such a way that water is sprayed uniformly over the coke bed without hitting any obstruction.
4. Ensure that the water spray is opened intermittently so that water does not go inside the furnace which causes an explosion
5. Ensure that the bleeder valve is not closed fully during quenching operation
6. Ensure the refractory material or any inflammable material will not be stored within the vicinity of the furnace during quenching operation
7. All electrical and instrumentation installation and cables should be fully cladded and protected against fire.
8. Unauthorized operation or repair of any equipment is a punishable offence.

## BLOWING-IN

1. Ensure that the trials taken for all accessories after the clearance.

2. Remove all the personnel from furnace top before light-up

3. Follow the instruction of production HOD for start-up

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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: 10.07.2023** | **Date: 10.07.2023** | **Date: 10.07.2023** |

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