**WORK INSTRUCTIONS FOR** **FURNACE TOP FIRING BF1 & BF2**

**RESPONSIBILITY: Shift Superintendent**

**Criteria: Safe furnace top firing**

**Identified Hazards:**

1. BF Gas leakage
2. Contact with hot Fumes
3. Fall of a person from height
4. Fall of material from top
5. Nonuse of PPE
6. Improper house keeping
7. Inadequate local lighting
8. Looking inside the furnace by standing in front of top hatch
9. Use of mobile phones
10. Getting scared of heights

**Significant Aspect:**

1. BFG Leakage
2. Emission of Flue gases

**PROCEDURE FOR FURNACE TOP FIRING**

1. Unauthorized operation or repair of any equipment is a punishable offence
2. Maintain slightly higher uptake temperature above 300 ⁰C before shutdown
3. Preferably the last dump before wind off to be coke
4. Take shutdown as per procedure VL/IMS/PID1/PROD/06A and VL/IMS/PID1/PROD/WI/06B for BF1 and BF2 respectively.
5. Open both side CB-5 entrance gate to the furnace top.
6. Check CO gas presence at top platform using air gas mask or two co detector before giving clearance for opening the hatch
7. Clearance for top firing to be given only after ensuring the plugging of all tuyeres at cast house.
8. Remove all top hatch wedges except one which is kept slightly loose and slide the hatch with the help of lancing pipe hook standing on one side.
9. Do not allow any body to stand in front of the hatch while opening, to be opened from side with a lancing hook. to avoid burn injuries from the flame shooting out of the hatch due to sudden ignition of gas. Ensure nobody stand in front of tuyeres before igniting BFG
10. Stop all steam to furnace top
11. Wait for 2 minutes after opening the hatch for checking the flame in the furnace.
12. Flame checking is to be done standing on one side of the hatch and not directly in front of the hatch to avoid burn injuries from the flame shooting out of the hatch due to sudden ignition of gas.
13. Incase flame is not seen than take a firewood wrapped with cotton waste and soaked in diesel, light the torch and throw it inside the furnace by standing on one side of the hatch and not in front of the hatch to avoid burn injuries from the flame shooting out of the hatch due to sudden ignition of gas. So that the gas starts burning.
14. Once furnace top flame is lighted than give clearance for service department to work at furnace top after checking and ensuring that the CO gas presence is nil at all areas.
15. Cover the hatch opening with a screen mesh
16. Open the bottom gate and the top bell of the dust catcher after top firing to facilitate better draught
17. Furnace top production engineer or experienced workmen to keep close watch on the flame inside so that it does not extinguish.
18. Throw lighted torches inside the furnace periodically to keep the flame alive, if red hot coke is not visible.
19. In case any given time if the top flame gets extinguish than immediately sound an alarm to alert and stop all persons working on furnace top, gas lines (evacuate). While reigniting follow same procedure i.e., take a fire wood wrapped with cotton waste and soaked in diesel, light the torch and throw it inside the furnace by standing on one side of the hatch and not Infront of the hatch to avoid burn injuries from sudden ignition of gas.
20. Clearance to be given for service department after top firing
21. If furnace top firing is not done clearance for working at Furnace top & GCS should not be given.

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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: 15.07.2022** | **Date: 15.07.2022** | **Date: 15.07.2022** |

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