**WORK INSTRUCTIONS FOR HEATING OF HOT BLAST STOVE AFTER MIDTERM**

**REPAIRS.**

**Criteria:** Quality, Environment, & Safe operating practices.

**Responsibility: HBS In charge**

**Identified Hazards:**

1. Fire & Explosion
2. Mechanical Pressure in the compressed air line
3. Contact with hot surface causing burn injury
4. No use of PPE / WI
5. Improper house keeping
6. Inadequate local lighting
7. Crowding at the job site
8. Running in hurry & getting hurt.
9. BF gas poisoning
10. Back fire during changeover of the stove.
11. Backfire due to insufficient draft below -10mm
12. Human error, Human Behaviour
13. Splash of fluid

**Significant Aspect**

* 1. Spillage of HSD
  2. Emission of flue gases
  3. Fire & explosion

**Procedure:**

* 1. Ensure availability of fire extinguisher at firing platform.
  2. Ensure that all flammable items are removed from the site below lighting-up.
  3. Insert the 90°. Pressure Jet Burner through Draft hole.
  4. Connect flexible hose connection for HSD & Compressed air to be done. Ensure the proper condition of hoses and there is no HSD spillage
  5. 2 Nos of Pressure Gauge to be installed on HSD & Compressed Air Line.
  6. Before lightning oil in the combustion chamber, all valves except chimney valve shall remain closed and in extreme case it may be closed partially for regulating draft.
  7. For initial Light up ignite the Pressure Jet Burner with the help of hand torch (cotton waste with HSD to be wrapped on long rod).

1. Ensure that minimum draft to be maintained is -10 mmwc. Adjust the draft so that flame intensity is sustained. Draft should always (–ve), should not allow (+ve draft).
2. Set the HSD Pressure in the HSD Header at about 4 Kg/Cm2 by adjusting the return valve in the HSD Return line.
3. Adjust the Compressed air pressure at about 5-6 Kg/cm2 in compressed air line and open the Globe valve to pass the compressed air through nozzle.
4. Ensure complete atomization of HSD, there should not be any droplets of HSD seen dropping below the gun.
5. Start the main combustion blower and adjust the combustion air by adjusting the damper opening about 10-15% (Close the BF Gas Valve for Main burner & water seal the main gas line).
6. Ignite the hand torch and insert hand torch up to the nozzle of the pressure jet burner and slowly open the globe valve of HSD line so that 90°. Pressure Jet burner is ignited.
7. As the main burner has been ignited, remove the hand torch.
8. Ensure proper combustion .Slowly increase the Globe valve for HSD line to maintain the desired temperature in the stove.
9. Raise Dome temperature from Initial temperature from 100° to 500°@ 10°/hr. by firing oil gun to prevent the bricks from Spalling (Expansion & contraction)
10. Keep close watch on the flame through peephole glass. Diesel valve to be immediately closed in case flame is not seen and reignited after some time of air purging.
11. Chimney temperature to be controlled at 150° ~ 200°. centigrade by regulating oil quantity.
12. Temperature control over the heating up process is exercised using the indication of thermocouple in dome, combustion chamber, chimney temperature.
13. The thermocouple and its indication and observation are recorded round the clock.
14. A log book should be maintained for entry of parameters for heating of stove, oil consumption, remarks of shift personnel.
15. Gas line to be purged with steam prior to charging the BF gas.
16. CO gas to be monitored round the clock.
17. BF gas can be introduced after dome temperature is achieved 500 deg cent along with oil support. After introduction of BF gas, if temperature increase / flame through the peep hole are not sensed, withdraw the BFG or increase oil support. After initial heating of 30 hrs with diesel. @ 3000 nm3/hr. manual control can be exercise to regulate the gas.
18. Slowly withdraw oil firing once gas starts burning and sustain.
19. **In case of unavailability of BFG gas, heating is to done exclusively by HSD till the dome reaches 950 OC**".
20. After the gas introduction & once the dome temperature is raise to 500°C, hold it for 10 hrs. For soaking.

 Holding at 500°C for 10 hrs.

1. Raise the dome temperature from 500°C to 1000 degree C @ 10°C/hrs. in two steps
   * Raise from 500°C to 800°C @ 10°C/h

 Holding at 800°C for 5 hrs.

* + Raise from 800°C to 1000°C @ 10°C/h

1. Before taking ON BLAST, dome temperature of 1000-1050°C is ensured

Do’s

1. ZERO state of energy to be ensured before working on charged lines.

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

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