



# PHARMA DEVILS

## ENGINEERING DEPARTMENT

### STANDARD OPERATING PROCEDURE

**Department:** Engineering

**SOP No.:**

**Title:** Operation of Boiler

**Effective Date:**

**Supersedes:** Nil

**Review Date:**

**Issue Date:**

**Page No.:**

#### 1.0 REVISION HISTORY

Rev. No.	Details of changes	Reason for change
00	NIL	NEW SOP

#### 2.0 OBJECTIVE

The objective of this SOP is:

- 2.1 To describe the procedure for operation of Boiler.
- 2.2 To monitor the performance of the Boiler.

#### 3.0 SCOPE

- 3.1 This SOP is applicable for the operation of Boiler.

#### 4.0 RESPONSIBILITY

- 4.1 The Plant Operator shall be responsible for:
  - 4.1.1 The operation of Boiler.
  - 4.1.2 Maintaining the records.
  - 4.1.3 Reporting for abnormal behavior.
- 4.2 The Engineer shall be responsible for:
  - 4.2.1 Corrective action in case of any deviation.
  - 4.2.2 Verifying the performance parameters as per acceptance criteria.



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#### 5.0 ACCOUNTABILITY

Head –Engineering Services.

#### 6.0 PROCEDURE:

##### 6.1 PRIMARY CHECKS:

**6.1.1** Check the water level in the boiler shell it should be up to the minimum mark on the sight glass. Maintain it, if required.

**6.1.2** Check the level of HSD Oil ; it should be up to the minimum mark on the service tank. Maintain it, if required.

**6.1.3** Check the water level in Oil Pre-heating Unit (OPH) electrical heater. Make it up if required, after closing the steam inlet & outlet valves.

##### 6.2 STARTING PROCEDURE:

**6.2.1** Switch “On” the main switch and individual isolator switches for all equipments.

**6.2.2** Open oil and water inlet and outlet valves respectively.

**6.2.3** Select & put “On” one of the fuel pump and fill up fuel lines by circulating fuel.

**6.2.4** Select & put “On” one of the water pump. The water level is controlled by level controller (Mobrey Controller) depending upon the water level.

**6.2.5** Keep the boiler air vent valve open & main steam stop valve close.

**6.2.6** Put “On” the Oil Pre-heating Unit (OPH) electrical heater.

**6.2.7** Put “On” the blower.

**6.2.8** Before starting the burner, ensure that modulation switch is in “Off” position.

**6.2.9** Put “On” the burner selector switch in AUTO position, if the fuel temperature rises up to 95°C (Degree Centigrade).

**6.2.10** Close the air vent valve, when the steam starts coming out through it.



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**6.2.11** Change over the fuel-heating mode from electrical heating to steam heating. When the steam pressure is about 3 kg/cm<sup>2</sup> (Kilogram per Centimeter Square).

**6.2.12** Open the main steam stop valve, when steam pressure builds up to minimum 5 Kg/cm<sup>2</sup>.

**6.2.13** Put "On" the modulation switch.

**6.2.14** Maintain record in Log sheet. (Annexure-1).

#### 6.3 STOPPING PROCEDURE:

**6.3.1** Put "Off" the burner modulation switch.

**6.3.2** Put "Off" the burner.

**6.3.3** Close the boiler steam stop valve and keep the air vent valve slightly open.

**6.3.4** Put "Off" the blower switch.

**6.3.5** Put "Off" switches for all other equipments like Fuel pump & Water pump and close all relevant valves.

**6.3.6** Ensure that water & fuel service tanks are full for subsequent operation.

**6.3.7** Isolate boiler control panel by putting "Off" all electrical supply.

**6.3.8** Blow down the boiler until water level drops by 50 mm or to the extent required depending upon the quality of feed water.

#### NOTE:

Never permit the water to disappear from the gauge glass when routine blow down is done.

#### 7.0 ANNEXURES:

Annexure-1 : Operation Logbook of Boiler.

#### 8.0 References (S)

NIL.



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#### 9.0 Glossary

SOP : Standard Operating procedure

No : Number

OPH : Oil Pre-heating Unit



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#### Annexure I Operation Logbook of Boiler

	BOILER
START TIME	
STOP TIME	

DATE:	
SHIFT:	
OPERATOR:	

Time Hrs.	Fuel Pump Pressure Kg/cm <sup>2</sup>	Return Pump Pressure Kg/cm <sup>2</sup>	Fuel Temp. °C	Boiler Steam Pressure Kg/cm <sup>2</sup>	Feed Pump Pressure Kg/cm <sup>2</sup>	Boiler Water Level %	Feed Water		Stack Temp. °C	Oil Header Temp. °C	Oil Heater PRV pressure Kg/cm <sup>2</sup>	Remarks
							Hardness ppm	pH				

**REMARKS:**

**ACCEPTANCE CRITERIA:**

Feed Water pH	Feed Water Hardness	Furnace Oil Temperature	Lowdown Water pH	Boiler Steam Pressure
8.5-9.5	NMT 5 ppm	85-120°C	10-12	NMT 10 Kg/cm <sup>2</sup>

**CHECKED BY:**  
(Engineer)