**TITLE: - SOP for Starting & Stopping of firefighting Pump**

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| **S.No.** | **Activity (FFE)** | **RESPONSIBILITY** |
| 1. | Check for Fuel level in fuel tank of FFE-1/2. | QRT STATIONED AT LOCATION |
| 2. | Ensure the Fuel supply valve of engine (FFE-1/2) is open. | -Do- |
| 3. | Ensure the battery health indicator is OK in FFE-1/2 start stop panel. | -Do- |
| 4. | Check the lube oil level of the Engine (FFE-1/2). | -Do- |
| 5. | Check the coolant level of Engines (FFE-1/2), if less it needs to be topped up. | -Do- |
| 6. | Put the selector switch of FFE-1/2 start-stop panel on manual mode for local operation. | -Do- |
| 7. | For remote operation, put the selector switch of start-stop panel on remote mode. | -Do- |
| 8. | Ensure that the Suction & Discharge valve in fully open condition. FF-VLV-1 & 2 for FFE –1; FF-VLV-3 & 4 for FFE –2 | -Do- |
| 9. | Press the respective engine start switch for starting of Engine (FFE-1/2). | -Do- |
| 10 | Look into the parameters of the Discharge header Pressure, engine water temperature; lube oil pressure etc. when engine (FFE-1/2) is running. | -Do- |
| 11 | Press the engine stop switch for 3-4 sec to stop the engine (FFE-1/2). | -Do- |

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| **Description** | **Set Point** |
| Normal RPM of Engine | 1500 RPM |
| Normal Discharge header pressure | 8-9 kg/cm2 |
| Maximum Shut Off Pressure of Engine | 10.5 kg/cm2 |
| Minimum running Lube Oil Pressure | 1.5 kg/cm2 |

**Safety Requirements:** Care must be taken while working with tools and piping works specially at height. All personnel involved must use appropriate PPE e.g. Safety Helmet, safety shoes, Gloves etc as per risk register.

**OPERATION PARAMETERS AND ENGINE’S SET POINTS:**

**AUTO OPERATION PHILOSOPHY OF JOCKEY & FF ENGINES:**

Automatic Start / Stop Sequence of the Jockey pumps have been envisaged. It shall be controlled by fire water network pressure through pressure switches.

Start / Stop Set Point of the pressure switches for the Jockey Pump for auto mode operation shall be as under:

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| **Equipment** | **Set Point (KG/CM2)** | **Remarks** |
| HAT-FF-PS-1 | 7 | Jockey Pump Start |
| HAT-FF-PS-2 | 9 | Jockey Pump Stop |

The valves on suction and discharge arm of jockey pump shall be always kept opened.

Running / idle / not available status of the jockey pump and operated / non operated status of the pressure switches shall be continuously displayed on the operator screen as under:

Pump Running - Red

Pump Idle - Green

Pump Not Available - Amber

Pressure Switch operated - Red

Pressure Switch not operated - Green

* Operator shall assign the priority to each Jockey Pump (JP-1/2) through HMI, based upon the availability of pumps. Jockey Pump having Priority "Duty” shall be started upon actuation of Pressure Switch (HAT-FF-PS-1).
* If "Duty” priority pump fails to start, “Standby” pump shall start.

Set Points for the main firefighting pumps for auto mode operation shall be:

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| **Equipment** | **Set Point (KG/CM2)** | **Remarks** |
| HAT-FF-PS-3 | 6.0 | Start of first priority pump (Priority-1) |

* Operator shall assign the priority to each pump through HMI, based upon the availability of pumps. Fire Fighting pump having Priority "Duty” shall be started upon actuation of Pressure Switch (HAT-FF-PS-3).
* If "Duty” priority pump fails to start, “Standby” pump shall start.
* Normally the firefighting pumps (FFE-1/2) must be kept in AUTO mode of operation. Only for testing or the trial runs, manual mode operation shall be activated.
* In case of requirement of running of more firefighting Pumps (beyond 1 no.), operator has to start the Standby Fire Fighting Engine in Manual mode.
* On completion of FF operation, all running pumps are to be stopped individually in Manual mode.
* After stopping of all the engine driven pumps, Operator has to reset the logic by pressing AUTO LOGIC RESET button on HMI. Then, all the pumps are to be kept in AUTO mode individually with priority selection, depending upon availability of FF pumps. Now, the system is ready for next operation.

**Stop Sequence**: Each of the firefighting pumps can be started in Local / Remote / Auto mode. However, the pumps shall have to be stopped manually from operator’s control desk or from field. **Auto stop** sequence of the pumps is not envisaged.

The valves on suction and discharge arm of each pump shall be normally kept opened. FF-VLV-1 & 2 for FFE –1; FF-VLV-3 & 4 for FFE –2.

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| RECORDS GENERATED : | 1) | SHIFT LOGBOOK SHEET |
|  | 2) | SHIFT HANDING OVER REGISTER |
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