



NLC TAMILNADU POWER LIMITED
DEPARTMENTAL PROCEDURE MANUAL
(Incorporating ISO 9001:2015, ISO 14001: 2015 & ISO 45001: 2018)
STANDARD OPERATING PROCEDURE

TITLE:- SOP FOR CEP OPERATION

Doc. ID: NTPL/OPRN/SOP-18

PURPOSE: To define CEP operation

SCOPE: This SOP is applicable at NTPL

RESPONSIBILITY: Shift Engineer / Operation Engineer

PERFORMANCE CRITERIA:

ACTIVITIES:

Pump Charging:

- Close the Suction Filter Drain valve and Open Filter Air vent
- Ensure that the Discharge valve and its bypass are in closed condition
- Keep the Discharge solenoid valve air vent Open. (From DCS)
- Open the manual valve in the Balancing line from Canister to Condenser
- Open manual valve in the Suction Pressure Relief valve line
- Open Suction valve slightly and Close Suction Filter air vent after releasing air
- Fully Open the Suction valve from UCB
- Check Oil level in bearing housing
- Open the DMCW valves to and from the Thrust Bearing Oil Cooler. Ensure water flow in the lines.
- Keep the CEP Gland Sealing valves open

Line Charging upto Deaerator:

- Open inlet and outlet manual valves of Gland Steam Condenser and Close its bypass.
- Open before and after manual isolation valves of GSC Minimum Flow RC Valve (CDV 39) and Close its bypass.
- Keep close, after isolation valve of CEP Recirculation valve.
- Open before and after manual isolation valves of Excess condensate to CST control valve(CDV-43) and one isolation valve near CST tank. Close CDV-43 Bypass MOV CDV-45.
- Open CPU Bypass (100%) motor operated valve CDV-19 and isolate both CPU.
- Open CDV-22 after isolation valve and keep before isolation MOV close
- Close CDV-25 and its isolation MOV and Close CDV-27
- Check all inlet and outlet motor operated valves of LPH1, 2 and 3 in open condition and their bypass valves in closed condition.
- Check all drains of, GSC, DC, LPH lines and water boxes to be closed. Keep all air vents open and close them after air releasing.

CEP Starting

- Hot Well Make up system should be ready (DMV-38 and DMV-63 isolations valves to be opened) and all equipment in the Main Condensate line should be ready (isolated if under LC) prior to pump starting (no LC pending).



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- One CT Pump and one TGDMCW pump should be in service.
- Ensure adequate level(0mm) in the Condenser hot well.
- Release local emergence push button switch
- Open Suction valve fully after charging the pump at local.
- Keep Discharge and its bypass valve in closed condition.
- Close CEP to LPBP spray control valves.
- Open Discharge Header Vent at local.
- Open Excess condensate to CST valve (CDV 43) around 20%
- Keep normal make up valve (DMV-38) SP to be 0 mm Hot well Level and Emergency makeup valve (DMV 63) SP -30mm.
- If all the permissive are satisfied Start One CEP and Open the Discharge Valve.
- After starting Pump, immediately open GSC Min Flow RC valve (CDV-39) to 40%, to create Pump suction flow >300 TPH
- After starting of pump, ensure closing of SOV vent.
- After starting the pump, monitor local condition, winding and bearing temperatures
- Check CDV-39 valve set point and keep it at 350 TPH of MC flow if one CEP is running and 750 TPH if two CEP are in service and put CDV-39 in auto
- Open CDV-22 before isolation MOV (CDV-21), and slowly charge all LP Heaters.
- After charging LP Heaters, Keep Deaerator level control valve set point at +100 mm.
- After starting two CEP, Select third CEP and put as Standby CEP.

Permissives for CEP Starting:

- Suction Valve is Fully Open
- Hot well level is adequate (>-250 mm)
- Switch gear available
- Switch gear not Disturbed
- Thrust bearing temp< 100 deg.C
- Motor bearing temp< 85deg.C
- Motor winding temp< 125deg.C
- Discharge side SOV air vent valve should be Open.
- Ensure Switchgear is available, Power supply is ON and Local latch is released

Protections for CEP:

- Hot Well level is low (< -1850 mm)
- Thrust Bearing temperature is high (>105 °C)
- CEP Motor bearing temp high (>90 °C)
- Motor winding temp > 130 deg.C
- CEP ON AND Discharge pressure low (<20 ksc)



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- CEP ON for 10 sec AND suction flow low(<300TPH) TD 5 sec
- Suction valve not open
- Electrical protection acted

Interlocks: (Reserve pump must be selected as standby)

- Whenever running pump trips, reserve will start on electrical interlock.
- Whenever the Condensate Discharge Header pressure drops below 20 Ksc, reserve will start after a time delay of 10 sec.
- Whenever Discharge Pressure of the running pump drops below 15 Ksc, Reserve will start and the running pump will get tripped after a time delay of 10 sec.

RECORDS:

Record Title	Record No.	Location	Responsibility	Retention Time

VERIFICATION, CORRECTIVE AND PREVENTIVE ACTION:

HOD shall ensure adequacy and implementation of the above procedure through periodic interaction with department personnel, and regular review and monitoring of the processes and compliances. In case of any observed deviation, corrective and preventive action shall be immediately undertaken.

HOD