

UNIT TRIPPING REPORT

UNIT No:2

STATION: NTPL, TUTICORIN.

OUTAGE: NO. 61

REPORT NO: 61

1. Date of tripping : 17-12-2021
2. Time of tripping : 22:23:27 Hrs
3. Status before tripping
 - a) Unit load : 177 MW
 - b) Mills in service : B, C, D & E
 - c) Oil guns in service : CD 2,3,4 EF 1,2,3
 - d) Boiler feed pumps in service : A
 - e) CEPs in service : A & C
 - f) ID fans in service : A & B
 - g) FD fans in service : A & B
 - h) PA fans in service : A & B
 - i) CWP in service : A & B
4. First Up protection acted : IPT Casing Rear DT high
5. Similar occurrences in the Financial Year : Unit #1 on 07.01.2021
on HPTDT (TAR No: 54)
6. Other relays/protection acted : TP1&2 followed by MFT
7. Supporting documents attached : SOE & Trend
8. Any operation done prior to tripping : IPT (R) Bottom TE 1 forced.
9. Analysis of tripping :

Unit #2 load raising was in progress after synchronizing @ 20:15 hrs. IPT(R) ΔT_1 bottom temperature element fault appeared @ 21:00 hrs. Temperature element was checked and found healthy but the temperature converter module was faulty and so the same was forced. At 22:23 hrs turbine tripped on IPT(R) *Casing ΔT high* protection at a load of 280 MW. However, Boiler was in service as HP/LP BP valves came into service.

LPBP changed over from auto to manual mode as spray valves were not adequately opened. This lead to HRH pressure rise and SV-21

got stuck in open condition. So LPBP steam valves were opened manually to reduce RH pressure and to seat the safety valve. Later on Boiler also got tripped on RH protection.

10. Root cause:

First IPT (R) bottom-1 temperature input fault was due to converter module and it was being attended after forcing its value. Two out of Three ΔT logic was in place at that time. As load was rising and @ 200 MW fault occurred in $\Delta T1$ due to temperature rise of the top element. A little later, another spiking occurred in $\Delta T2$ (IPT-R-Top2) leading to turbine protection trip (2 out of 3 contact) on false IPT ΔT cause.

As LPBP Spray was inadequate, taking LPBP control into manual and opening the steam valves resulted in trip closure of LPBP steam valves on spray protection. Closing of both LPBP valves caused RH protection to act and Boiler got tripped after the time delay of 10 seconds.

11. Remedial measures taken/to be taken:

Whenever casing ΔT values are getting faulty during initial load raising, it's better to bypass the total ΔT protection during attending on-line, after arranging for continuous monitoring and providing operator alarms. Anyway turbine margins and stress levels are to be scrupulously monitored during synchronizing and initial load raising phases.

HPBP & LPBP valve auto operation while Boiler in operation has to be monitored and manually intervened, if necessary. Malfunctioning of spray valves will generally result in "Trip Close" acting thereby leading to tripping of Boiler on RH protection.

12. Time/Date of boiler light up and sync:

Light Up: : 18-12-2021 00:08 hrs

Sync'd : : 18-12-2021 03:55 hrs

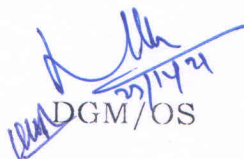
13. Delay for Synchronizing : Nil

14.Recommendation / Action plan :

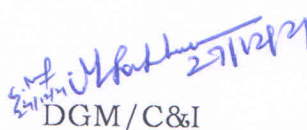
Sl.No.	Recommendations/Action plan	Responsibility	Time line
1)	Temperature inputs may be attended after bypassing total protection to avoid trips. However values are to be continuously monitored during the period.	C&I	Immediate.
2)	Whenever HP/LPBP is in operation, auto functioning of the steam and spray valves are to be monitored and to be intervened manually, if found necessary.	Opn	immediate

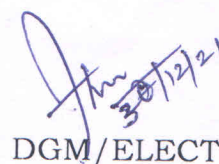
15.Any specific learning / feedback :

Any fault appearing in DT elements are to be monitored continuously as the logic gets changed from 2/3 to 1/2 logic. While on-line attending of the faults, total bypassing is advisable with monitoring.


DGM/OS


DGM/EEMG


DGM/C&I


DGM/ELECT


GM / C&I and Opn

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