UNIT TRIPPING REPORT

UNIT No: 1 STATION: NTPL, TUTICORIN.

OUTAGE: NO.54

REPORT NO: 54

1.Date of tripping : 07-01-2021
2.Time of tripping : 15:22 Hrs
3.Status before tripping
a) Unit load : 274MW
b) Mills in service : A, B, C, D, & E
c) Oil guns in service : Nil
d) Boiler feed pumps in service : TDBFP A &B
e) CEPs in service : A&B
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 & C
4.First Up protection acted : Turbine tripped on HPT ΔT
5.Similar occurrences in the Financial Year : Nil
6.Other relays/protection acted : Boiler was in service.
7.Supporting documents attached : S.O.E
8.Any operation done prior to tripping : Nil.
9.Analysis of tripping :

Unit #1 was synchronized at 09:51 hrs on 07.01.2021 after a period of 35 days of Major overhauling of LPT & Generator. Load was raised normally as per cold start up curve and was maintained at technical minimum of 280 MW as per Schedule.

At 15:22 hrs Turbine got tripped on HPT Casing ΔT high protection, which usually acts when two out of three ΔT is more than 100°C above 100 MW load. HPBP fast open occurred and Boiler was in service.

10.Root cause

There are three Temperature elements in the top and bottom of HP casing. 3 ΔT signals are generated based on respective top and bottom casing temperature difference. When Load > 100 MW and 2/3 ΔT > 100°C Turbine trip is initiated .

Out of the three sets of Thermocouple , ΔT 1 got excluded after 200 MW due to difference among 3 HP casing ΔT elements > 5°C and a faulty signal variation in ΔT 2 due to cable damage in HP Top casing Temperature element 2 triggered the protection trip as ½ protection logic acted.

11. Remedial measures taken/to be taken:

As per the existing Temperature element healthiness checking circuitry, if a deviation > 5°C occurs among ΔT signals, the particular ΔT signal is considered faulty and gets eliminated from protection logic and the logic monitoring changes from 2/3 to 1/2 . This criterion for a fault signal can be changed to a higher value than 5°C, with alarm, which will be better as time will be available for taking corrective action on that element.

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

Light Up: : Boiler was in service.

Sync'd: : 16:43 Hrs on 07-01-2021

13. Delay for light up : No delay.

14. Recommendation / Action plan :

Sl.No.	Recommendations/Action plan	Responsibility	Time line
1)	Deviation between ΔT value considered for Faulty signal elimination may be increased from 5°C difference to 25°C to ensure availability of 2/3 logic and alarm may be provided for faulty signal	C&I	Immediate

15. Any specific learning / feedback :

Alarms should be available for deviation high and turning bad quality for any protection trip element signals so that time will be available for correcting the defective element without causing any unwanted trips.

ADGM / OS

DGM/EEMG

DGM / C&I

DGM / ELECT

DGM / O&C

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