UNIT TRIPPING REPORT

UNIT No: 1

STATION: NTPL, TUTICORIN.

OUTAGE: NO.71

REPORT NO: 71

1.Date of tripping :01-03-2023

2.Time of tripping : 03:44:56Hrs

3.Status before tripping

a) Unit load :490MW

b) Mills in service : B, C, D, E, F &G

c) Oil guns in service : Nil

d) Boiler feed pumps in service : TDBFP A &B

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 : Class C protection acted due to GT-Y winding temp high.

5.Other relays/protection acted :1) Turbine tripped on turbine over speed,

2) Boiler tripped on LOSS of all fuel.

3) Over Excitation (V/Hz)

4) Low forward Power

6.Supporting documents attached : S.O.E & Trends

7.Any operation done prior to tripping : Nil

8.Analysis of tripping :

Unit was running at 490MW in CMC. Suddenly load came to house load, turbine control changed to speed loop, HP bypass fast opened,3 mills tripped on run back, but within 2 sec turbine speed increased to 3300 rpm and turbine tripped on over speed. MDBFP came in auto but due to under voltage all equipment's got tripped resulting in boiler trip on loss of all fuel. Condenser vacuum was killed and seal steam isolated to avoid diaphragm damage.

9. Root cause :

Due to GT-Y phase winding temp high false pickup, class –C protection acted (It was suspected that the false pickup was because of heavy lightning during that time), GT breaker opened, resulting in house load. Since load throw off is from full load, turbine speed increased to 3300 RPM, resulted in a turbine trip on turbine over speed (both mechanical and electronic over speed acted). HPBP Fast Open came on GT Breaker opening. BTS changeover not initiated since it was a Class-C trip.

*House load operation- From: 03:44:56Hrs

To: 03:46:11Hrs

*Turbine reached 3300 rpm @ 03:44:57Hrs

On "Over Excitation (V/Hz)" protection, Field breaker tripped and then with the low forward power, class-A protection initiated and BTS changed over from unit to station bus on Auto. Class A trip initiated @ 03:46:11Hrs. In the meantime, all the motor loads connected to the Unit Bus (UT) tripped on under voltage including MDBFP. So boiler tripped on loss of all fuel.

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

Light Up: : 15:15 Hrs on 01/03/2023

Sync'd: : 17:09 Hrs on 01/03/2023

11. Delay for light up : Condenser vacuum breaker inoperative.

12. Reason for light up delay: vacuum breaker was inoperative. So, the vacuum breaker along with the solenoid valve which actuates the vacuum breaker was checked and the actuator for the vacuum breaker was replaced resulting in a light up time delay.

13. Action taken: The GT-Y Marshalling box was checked for moisture entry, it was found normal.

14. Recommendation / Action plan :

i) To avoid false pickup, it is proposed to modify the protection wiring to create more space between terminals in all marshalling boxes during long stoppages.

ii) Load Shedding Relay initiation during class –C protection may be checked during the next opportunity to avoid turbine trip on over speed under such circumstances.

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