UNIT TRIPPING REPORT

UNIT NO: 2 STATION: NTPL, TUTICORIN.

OUTAGE: NO. 63

REPORT NO:63

16. Date of tripping : 19.12.2021
17. Time of tripping : 13:24:00 Hrs
18. Status before tripping
    - j) Unit load : 278 MW
    - k) Mills in service : A, C, D, F & G
    - l) Oil guns in service : Nil
    - m) Boiler feed pumps in service : A & B
    - n) CEPs in service : B & C
    - o) ID fans in service : A & B
    - p) FD fans in service : A & B
    - q) PA fans in service : A & B
    - r) CWP in service : A & B
19. First Up protection acted : Overall Differential protection(87OA), HV Overhang Differential protection (87HV)
20. Similar occurrences in the financial year: Nil
21. Other relays/ protection acted : Dead Machine Protection(50GDM) Other critical equipment tripped on Under voltage since fast changeover to station failed due to bus voltage dip.
22. Supporting documents attached : SOE
23. Any operation done prior to tripping : Nil

24. Analysis of tripping:

The TG tripped on Class A protection. The Class A protection was initiated due to Overall differential Protection (87OA). Due to sudden dip in voltage in 2BA, 2BB bus sections during the fault, fast changeover from Unit to Station failed which resulted in tripping of boiler due to critical equipment tripping on Undervoltage protection. DG set came into service and all DC emergency drives were taken into service immediately. Condenser Vacuum breaker got opened due to tripping of HPCF pumps. Sealing steam to TG and TDBFPs were manually isolated. Thus, LPT diaphragm was protected from rupture as condenser pressure didn't rise. STG stalling was also avoided during the unit black out even as CWP pumps tripped and condenser vacuum got killed.

25. Root cause:

GT R phase lightning arrester failure triggered differential protection in Overall Differential Relay leading to Class A tripping of TG. Due to sudden voltage dip in 2BA/2BB bus sections, fast changeover from Unit supply to Station supply failed leading to tripping of all HT & LT running equipment. The BTS operation is found to be in order.

26. Remedial measures taken/ to be taken:

The existing Lightning Arresters (LAs) are of porcelain type and it is proposed to replace them with Polymer type LAs. Purchase of Polymer type Lightning Arresters have already been initiated and PO for 6 Nos. of 390KV LA placed to M/s OBLUM, Hyderabad on 30.08.2021. The LAs shall be supplied in January 2022 as agreed by vendor and will be replaced in GT 1 & 2 in the next available opportunity. As DG set came into service and supply was normalized immediately, LPT diaphragm failure and STG stalling could be avoided.

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

Light up : 19.12.2021 22:12 hrs

Sync'd : 20.12.2021 01:20 hrs

28. Delay for synchronization : Nil

29. Recommendation / Action plan :

Sl. No	Recommendations / Action plan	Responsibility	Time Line
1)	It is proposed to replace all (21 Nos) 390KV LA in Switchyard and transformer yard with Polymer type LA.	EM	The 6 Nos of LA for which the PO has been already placed shall be commissioned in GT 1&2 on delivery which is expected in January, 2022. Procurement is under process for the remaining 15 Nos of LAs and shall be replaced as and when required depending upon the periodical IR value and 3rd Harmonic leakage current measurements.

30. Any specific learning/ feedback:

The porcelain LA's were installed in the year 2013 and since then subjected to continuous discharge over the years in winter owing to coastal location. Later, in the year 2016 all Insulators and LAs were coated with HVIC (High Voltage Insulation Coating). Considering the LA ageing and the record of periodical readings of third harmonic resistive leakage current, the porcelain LAs are to be replaced with new polymer LAs.

3/1/22 3/1/2022

DGM/OS DGM/EEMG ADGM/C&I DGM/EM

GM/ C&I AND OPN