
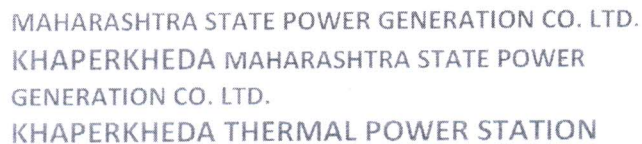


| EVENT ANALYSIS REPORT  |                        |                        |                        |  |
|--|------------------------|------------------------|------------------------|--|
| UNIT NO : 01   | TPS : Khaperkheda TPS  |                        | Unit Capacity : 210 MW |  |
| 1. *HO Code :  | Station Code :<br>T003 | Time -<br>08:09 Hrs    | Date -<br>23/01/2017   | No. of days from last sync. :<br>19 days |
| 2. Operating conditions at the time of Event :-  |                        |                        |                        |  |
| Load   |                        | Coal Cycles in service |                        | Oil Support                              |
| 194 MW   |                        | B, C, D, E & F         |                        | Nil                                      |
| 3. Nature of Event : T.A. set tripped due to UAT earth fault.  |                        |                        |                        |  |
| 4. Name of First Up, Main Protections & Protection on which GCB tripped :<br>UAT Earth Fault (First Up), Generator Protection Operated, Turbine Tripped, Turbine Trip Gear Operated, Turbine Trip To boiler Trip.  |                        |                        |                        |  |
| 5A) Observations : On dt. 23/01/2017 at 08:09 hrs, set was on load at 194 MW with five coal cycles in service (A-S/by) and no oil support. Suddenly, set tripped on "UAT Earth Fault" at 08:09 hrs. Generator circuit breaker open on generator protection of "UAT EARTH FAULT".   |                        |                        |                        |  |
| 5 B) Remedial Action/work done:<br>UAT earth fault protection relay 51 NUAT (VDG14) checked and its operation found ok.<br>UAT LV side IR values measured and found ok. (Above 200 mega-ohms by 5 KV motorised megger.)<br>UAT HV side IR values measured and found ok. ( Above 200 mega-ohms by 1 KV megger.)<br>Neutral Grounding Transformer (NGT) of UAT also checked & found ok.  |                        |                        |                        |  |
| 6. Root Cause Analysis : Exact earth fault could not be pin pointed as the fault was of transient nature. The tripping seemed to be spurious one. The matter is referred to Chief Engineer (Gen. construction), Koradi, for further analysis and solution. ( T.O. Letter No. KHG / TIC-I / 02 / 15099 / dtd 24 JAN 2017.).   |                        |                        |                        |  |
| 7. Preventive action suggested (Short Term) : As suggested verbally by S.E. (Testing), Koradi, this protection i.e. Voltage based earth fault protection will be removed in Unit-1 & 2. This type of protection has already been removed in all other 210 MW sets of Mahagenco. S.E. (Testing) will put up this matter before Electrical Protection Committee (EPC) and give suggestions in writing. The same will be implemented in next available opportunity, i.e. for removal of this protection Unit-1 & 2 should be on 'OFF-bar' for @ 1 to 2 hrs. |                        |                        |                        |  |
| 8. Preventive action suggested (Long Term) :-  |                        |                        |                        |  |
| 9. Similar event occurred last time :  | Unit No # 1, 210MW     | Time:                  | Date:                  |  |
| Event: No similar event found.<br>Remedial Action :  |                        |                        |                        |  |
| 9A. Implementation Status of Long Term/Short Term measures stated at Sr No 7&8 :-  |                        |                        |                        |  |
| 10. Boiler lighted up  | Time -11:20 hrs.       | Date- 23/01/2017       |                        |  |
| 11. T-A Set Synchronized   | Time -13:58hrs.        | Date- 23/01/2017       |                        |  |
| 12. Remark:  |                        |                        |                        |  |
| <br>Chief Engineer  |                        |                        |                        |  |
| 13. Recommendations of Works Section:  |                        |                        |                        |  |
| 1. Procurement/Replacement Plan:   |                        |                        |                        |  |
| 2. Operational Error:  |                        |                        |                        |  |
| 3. Delay in Maintenance:   |                        |                        |                        |  |
| 4. Delay in bringing back the Unit:  |                        |                        |                        |  |
| 5. Training of Staff:  |                        |                        |                        |  |
| 6. Whether remedial action is completed satisfactory & point is closed:  |                        |                        |                        |  |
| C E/Dy C E (Works)   |                        |                        |                        |  |



Reg. No. U-40100 MH 2005 PLC 153648

(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)

Office of Chief Engineer T.D.C. Kharagbada Dist. Aligarh. D.I.A. 444400

KHG/TIC-I/02

15099

Date:

24 JAN 2017

To

The Chief Engineer (Gen. Constn),  
MSPGCL, KTPS  
Koradi

Kind Attn: Shri Amilkanthwar, SE (Testing).

**Sub :** Tripping of 210 MW unit 1 of Khaperkheda TPS on UAT Earth Fault Protection.

On dated 23 January 2017, 210 MW Unit 1 of Khaperkheda TPS was sharing 194 MW load. At @ 8:09:33 hrs unit tripped on UAT Earth Fault Protection (51 NUAT). The other relays which were found operated on GRP panel were Generator over Frequency (12G) and Loss of Excitation (40 G & 40 GZ).

The relay used for UAT Earth Fault Protection on LV side is VDG 14 with setting 5.4 V and TMS 0.7. This relay was tested and found to be operating accurately as per the setting. Also UAT LV winding IR value checked, found >125 Mohm. As LV winding IR values were OK, it was decided to check IR of HV winding. The IR values of HV winding were found to be >200 Mohm.

No direct earth fault was observed on UAT; hence clearance was given for rolling the turbine. At 600 rpm and 3000 rpm of turbine speed, voltage was measured across the VDG 14 relay terminals. This voltage was nearly zero.

This tripping event report is for your kind information and analysis purpose. It is requested to provide suggestions/solutions for further improvement at TPS level.

Chief Engineer (O&M)  
MSPGCL, Khaperkheda TPS