TRIP ANALYSIS REPORT

TRIP ANALYSIS REPORT /TAR-012/ UNIT 1 / 14.07.2017 **Dt. 17-07-17**

Ref: 1. TRIP ANALYSIS REPORT /TAR-010/ UNIT 1 / 14.07.2017 Dated 17-07-17

OCCURRENCE:

(a) **Condition:** Unit-1 was in service with 435 MW in LP mode and coal flow 208 tph at 23:25 hrs. on 14.07.2017.

(b) **Incident:** Turbine tripped on protection IPT Fr DT high at 23:26:36.7 and Boiler tripped at 23:27:59 hrs on MFT (RH Protection). Unit was light up at 00:30 hrs after getting clearance from concerned authority from C&I division and synchronized at 01:43 hrs on 15.07.2017.

SOE OF DDCMIS ALARM PAGES:

TIME	DESCRIPTION	STATUS
23:26:36.275	IP Casing Fr Diff Temp (11MYA01EZ175)	Operated
23:26:36.354	TP CHNL 1.1 On	True
23:26:36.496	IP Casing Fr Diff Temp (12MYA01EZ175)	Operated
23:26:36.764	Turb. Trip Ch1.1 CMD	On
23:26:36.764	Turb. Trip Ch1.2 CMD	On
23:26:36.986	Turb. Trip Ch2.2 CMD	On
23:26:37.285	Turb. Trip Ch1.1 Operated	
23:26:37.642	Main Trip VLV-1	Tripped
23:26:37.669	Main Trip VLV-2	Tripped
23:26:38.714	All ESVs Closed	
23:26:40.062	Turbine Tripped	
23:26:40.425	HPBP Valve Fast Open Acted	
23:26:40.825	BP 1 Valve Fast Open	True
23:26:40.825	BP 2 Valve Fast Open	True
23:26:41.334	MDBFP Auto Start	True
23:26:41.814	BP1 VLV > 2% Open	True
23:26:41.814	BP2 VLV > 2% Open	True
23:26:42.004	Gen Breaker Opened	
23:26:42.939	Run Back 3 Mill Acted	
23:26:43.824	BP 1 Valve Fast Open	False
23:26:43.824	BP 2 Valve Fast Open	False
23:26:46.076	Pulv Motor F Tripped on Run Back	
23:26:47.911	MDBFP On	
23:26:51.555	Pulv Motor E Tripped on Run Back	
23:26:56	Pulv Motor D Tripped on Run Back	
23:26:57	BP1 VLV < 2% Open	
23:27:26	BPE2 Downstream Temp V High	
23:27:31.795	BP2 Priority Close	
23:27:47	BP2 VLV < 2% Open	
23:27:48.420	Both HPBP Closed	
23:27:58.559	Loss of RH Protection Acted	
23:27:59	MFT CH 2 Operated	

23:27:59 MFT CH 3 Operated
23:27:59 MFT CH 1 Operated

ANALYSIS from SOE and Trend:

Trip analysis from SOE and trend is made as below:

1. Unit was in service at 435 MW and 6 mills in service with a total coal flow of 208 tph.
2. At 23:26:36.275 IPT Casing Front DT protection acted (False Pick up) and Turbine tripped on this protection at 23:26:36.764.
3. On tripping of turbine, HPBP Fast open command acted 23:26:40.425and BPV 1 & 2 opened from 0% to 100% (Trend Data: 23:26:40 to 23:26:45). MDBFP auto start command processed at 23:26:41.334. Generator CB opened at 23:26:42.004 and Runback to 3 Mill Condition acted at 23:26:42.939.
4. After completion of period for BPV Fast open command, BPV 1 closed to 0% (Trend data: 23:26:45 to 23:26:55) and BPV 2 was maintaining the MS Pressure in auto based on pressure controller set point. (Trend data: 23:26:45 to 23:27:45).
5. Downstream temperature of BPV2 increased from 259 °C at 23:26:45 to 377 259 °C at 23:27:30 (Trend Data) leading to Priority close of BPV2 at 23:27:31.795 (SOE).
6. Due to Closing of both BPV1&2, Both HPBP Closed alarm appeared at 23:27:48.420 and lead to MFT on loss of RH Protection at 23:27:58.559.
7. MFT acted at 23:27:59 and tripped the boiler.

CONCLUSION:

Following points were concluded:

1. False Pick up in IPT FR Diff Temperature protection was due to failure in milli Amp converter. It was replaced by C&I Division and clearance was given for light up.
2. The milli Amp converter failure was due to no AC in the control room suspected. The cabin temp was 51 deg cent.
3. BPV1 didn't operate after fast open is servo valve problem.
4. As per logic when any one BP Valves open more than 2 %, BD valve will open in auto. But in this case, even though BPV2 & BPE 2 were open > 2%, BD Valve didn't open, as the corresponding logic was bypassed. Even after spray valve BPE2 opening increased from 0% to 32% (Trend Data), BPV2 downstream temperature increased to more than 370 °C and priority close acted on BPV2. It lead to closing of BPV2 and subsequently Loss of RH Protection acted due closing of all BPVs.

RECOMMENDATIONS:

1. To avoid unit tripping/Equipment tripping due to spurious action of instrument parameters, certain protection parameters for boiler and turbine were modified with acceptance of concerned department HOD and those may be implemented. (Annexure attached)

2. Whenever open or close auto operation for equipments was bypassed due to operational requirement, it shall be normalized within the shift. Foolproof system shall be evolved for this simulation.
3. Trip Committee recommendations provided in trip analysis report point no. 2 & 4 in reference-1 shall be adopted.
4. Control room AC shall always be maintained

CM/OS(T) ADGM/C&I DGM/Elec DGM/O&C