

TRIP ANALYSIS REPORT

TRIP ANALYSIS REPORT /3rd QTR/TAR-6/ UNIT 1 / 25.10.16

Dt. 25-10-16

OCCURRENCE:

- (a) **Condition:** Load: **484 MW** at 17:00 hrs on 25.10.16 with 6 Mills in LP mode and coal flow 259 T/hr. Steam flow 1458 t/hr and feed water flow 1534 t/hr.
- (b) **Incident:** Boiler was planned shutdown at 23:56 hrs on 25.10.16 due to boiler tube puncture.

OBSERVATIONS FROM TREND AND BOARD ENGINEER FEEDBACK:

Time	17:08	18:31	21:00
Load reference	480	460	450
Actual Load	491	460	442
Coal flow	259	264	273
Steam flow	1472	1371	1320
Feed water flow	1536	1431	1374
MS pressure ref	165	157	153
Actual MS pressure	169	156	150
ASLD	1.6	9.2	6.7

ANALYSIS:

Unit was in service with a load of 480 MW in LP mode with 6 mills, coal flow 259 T/hr. at 17:00 hrs.

Board engineer observed the readings in ASLD 8,9,10 and 21 around 18:00 hrs and immediately communicated to Boiler OS. Boiler OS along with Boiler maintenance went for Boiler local inspection and observed sound at 65 ML elevation boiler right side.

On analysis from the trend, the ASLD started rising from 17:15 hrs. There was no much difference between Steam flow and feed water flow till unit is stopped. Whereas load started dropping for constant coal flow. Hence puncture was suspected in RH coil.

Decision taken to shut down the unit for attending boiler tube puncture by 20:00 hrs. But it was decided to observe further since BM felt the difference between steam and water flow was not much. Then decision was taken by 22:00 hrs to stop the unit and not to take risk. Load reduction was started from 22 hrs and boiler was hand tripped at 23:56 hrs.

Boiler forced cooling was carried out with HP and LP BP in service along with fans admitting airflow around 900 T/hr taking care of Drum top and bottom differential temperature within permissible limit.

Boiler was inspected by OS and BM when the drum pressure was around 25 ksc. No sound was observed when Turbine BP was closed and again sound observed when HP BP was opened. Hence RH coil puncture was confirmed.

After boiler cooling, air was admitted into the RH circuit through drain point to locate the puncture. BM entered into the furnace and located the puncture in RH coil about 4M above the bottom of the coil around the LRSB 121 area and also identified the other damaged tubes near it. **Total no**

Later it was observed that the tube puncture was due to entrapped LRSB121. The steam blower was operated last on 24.10.16 by 13:30 hrs and got stuck up. It was noticed then and action taken by OS to retract it immediately by partly closing the puppet valve. Since it could be taken out only half, BM was informed by 16:00 hrs. BM tried to retract it on 25.10.16 morning. Till then the puppet valve was almost closed and just open to keep cooling the lance tube. LRSB 121 lance tube was cut, removed and dummied.

After attending the boiler RH coil puncture, the boiler was lighted up at 2:30 hrs on 30.10.16 and the unit was synchronized at 11:20 hrs on 30.10.16.

RECOMMENDATIONS:

- Since the RH coil failure was due to prolonged impingement of wet steam through LRSB 121 which got stuck while in operation, hereafter the wall blower as well as LRSB operation shall be carried out in the presence of Operation staff, Boiler pressure parts technician and one electrician with proper tools and tackles. Whenever LRSB stuck up inside, it should be attended immediately by OS/BM to retract it. In case if it is not successful within an hour, puppet valve has to be closed fully sacrificing the lance tube.
- It is observed that 4 nos of LRSB failed in U1 and U2 so far. The reason for the failure has to be studied in detail.
- As it took more hrs to enter into the furnace due to temperature in the RH coil, the RH metal temperature shall be reduced hereafter by reducing the HP BP downstream temperature set point to minimum possible extent when HP and LP BP was in service during forced cooling of boiler or RH spray shall be given to bring down the RH tube metal temperature to minimum extent possible without straining the tube in addition to air flow.

