

## UNIT TRIPPING REPORT

UNIT No: 2

STATION: NTPL, TUTICORIN.

OUTAGE: NO. 15

REPORT NO: 15

1. Date of tripping : 18-11-2017
2. Time of tripping : 12:06:03 Hrs
3. Status before tripping
  - a) Unit load : 373 MW
  - b) Mills in service : 5
  - c) Oil guns in service : Nil
  - d) Boiler feed pumps in service : TDBFP A&B
  - e) CEPs in service : A&B
  - 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 : MFT acted (Drum Level VHigh)
5. Similar occurrences in the Financial Year: Nil
6. Other relays/protection acted : Boiler trip/ Turbine trip/ Generator trip
7. Supporting documents attached : SOE & Trend
8. Any operation done prior to tripping : TDBFP A R/C valve opened manually @ 365 MW
9. Analysis of tripping : Unit was running at 365 MW with 2 TDBFPs and drum level control in auto mode just before tripping.

The drum level was steady at 56 mm @ 11:58:50 hrs. Steam/Feed water flow were 1113 / 1091 t/hr respectively. Speed ref / actual for 2A were 4460 / 4457 rpm (a diff of 3 rpm) and for 2B, 4451 / 4450 (a diff of 1 rpm) respectively.

R/C valve of TDBFP-2A was opened @ 363 MW to avoid auto opening of it when the individual suction flow becomes less than 400 T/hr at low load. After 2 mins duration the drum level dropped to -159 mm from +56 mm @ 12:00:50 hrs and steam / feed water flow were 1126 / 1080 t/hr, with R/C flow 433 in 2A. The speed ref/ actual for 2A was 5011 / 4723 rpm (a diff of 288 rpm). For 2B, 5003 / 4637 rpm (a diff of 366).

Considering the slow improvement in drum level, the R/C valve was closed for TDBFP-2A @ 12:04:20 hrs.

But the drum level was improving and at -72 mm @ 12:04:20 hrs and steam / feed water flow were 1186 / 1619 t/hr. Speed ref / act for 2A & 2B were 5496 / 4890 rpm (a diff of 606 rpm) and 5533 / 4828 rpm (a diff of 705 rpm).

Drum level shot up to 256 mm from -72 mm in a span of 1 min 40 sec after closing of 2A R/C valve, leading to boiler trip on MFT (drum level VHigh).

On analysing the above observations, it was concluded that the drum level controller behaviour is found to be normal during steady state conditions and sluggish during feed flow disturbances arising out of R/C valve operation.

Without properly judging the drum level improvement, the R/C valve of TDBFP-2A was closed which aggravated the problem and lead to boiler trip on drum level very high.


10. Root cause : TDBFP 2A& 2B Speed Controller Sluggish/  
Misjudgement in operation.
11. Remedial measures taken/to be taken : TDBFP 2A Speed Controller gain adjusted /  
TDBFP 2B Pilot valve of MCV to be cleaned.
12. Time / Date of boiler light up and synchronization: Light Up: 03:18 Hrs on 19/11/2017  
Synchd : 07:53 Hrs on 19/11/2017.
13. Delay for light up : Other pending activity completed.  
IPSV right side seat drain line puncture attended.
14. Recommendation / Action plan :

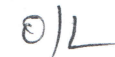
Sl.No.	Recommendations/Action plan	Responsibility	Time line
1	TDBFP 2B MCV Pilot valve is to be cleaned and valve characteristics to be checked	TMD	Opportunity
2	TDBFP 2A & 2B speed controller sluggishness to be tuned	C&I	Implemented
3	R/C valve opening logic to be modified based on speed dependent-flow instead of the present opening at flow less than 400 t/hr	C&I	Implemented


15. Any specific learning / feedback : Operation executives are advised to vary drum level set point only in steps, if required.  
Manual opn of R/C valve at lower loads, if required.

16. Signatures / Date :

B. S. —  
CM / OS  
C.B. SRIANARAYANAN.

  
DGM / C&I  
S. GANAPATHI

  
DGM / ELECT

  
DGM / O&C

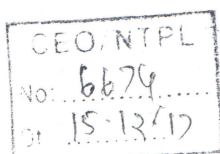
~~GM / O&M~~

DGM (TMD)  
pl. give your comments &  
action plan "18"  
Shubm  
9/12/17

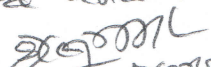
Copy submitted to CEO / NTPL

DGM/OS  
DGM/TM  
Pl. follow up.  
MR  
BR

Siv,  
TDBFP- 2B - MCV Pilot valve  
cleaning & valve characteristics  
will be carried out when  
TDBFP stopped condition.



Shubm  
11/12/17

  
DGM/OS  
14/12/17