

SPP TLR 5 Investigation Report
Flowgate 6009
(COOPER_S)
TLR Level 5: March 1, 2011

1. Description of purpose/cause of hold/curtailment.

This report is submitted in accordance with the NERC Transmission Loading Relief Investigation Procedure for the Level 5 TLR event that occurred on Flowgate 6009 on March 1, 2011. Flowgate 6009 is an SPP flowgate. This flowgate is used to monitor and control loading on several facilities in the area. The Level 5 TLR was in effect from 4:20 PM on March 1, 2011 until 7:00 AM CST on March 2, 2011. Projected flows on the Cooper South interface exceeded the SOL.

2. Facility/flowgate limitations and flows at the time the TLR was initiated.

At the time the Level 5B TLR was issued, the Limiting Element was rated at 610 MVA. Flow on the Limiting Element was 711 MVA. This flowgate does not have a Contingent Element.

3. TLR levels, timing, and relief requested amounts.

TLRs levels, timing and relief requested amounts are shown in the Event History and NERC TLR Log.

4. Transmission and generation outages or changes from prediction that may have contributed.

High external impacts in combination with Iatan 2 being offline for maintenance. Cooper – Fairport was in a planned outage.

5. Procedures implemented prior to hold/curtailment.

Curtailed non-firm transactions. Next hour flows predicted that not enough non-firm could be curtailed to alleviate loading on the flowgate.

6. The initial investigation shall compare all transaction curtailment lists as generated by the IDC with the list of transactions flowing as determined by the IDC (Whole Transaction Lists) both before and after curtailment. The reasons for any transactions that were excluded from curtailment shall be provided. For those transactions not curtailed, the Reliability Authority will identify those entities and any affiliation with said entities.

There were no known transactions excluded from curtailment for this TLR.

7. List of known transactions not in the IDC with Transaction Contribution Factors greater than the curtailment threshold and actions taken to curtail such transactions.

There were no known transactions not in the IDC.

8. Excerpts from the RA Operations Log containing information relevant to the TLR event.

Information was provided to Reliability Coordinators through the IDC and the RCIS. Also the SPP Reliability Coordinators logged information describing the actions taken at each issuance of the TLR. Times in the RC Log are CDT.

9. Flowgate limitations as identified by security analysis processes conducted by the Reliability Authority for the day prior to the TLR event.

In the next day process, we did see an issue with this flowgate, based off of the peak study.

10. State Estimator snapshots and security analysis, including any contingency analysis or stability analysis, along with any other recorded data indicating need for TLR.

The SPP Reliability Coordinator was monitoring their state estimator, RTCA and RTLODF applications for current flowgate loading and other potential issues during this time. eDNA data historian recorded all line flows before, during and after the Level 5 TLR event.

11. ATC limitations before, during, and after the TLR event.

SPP Tariff Administration grants transmission service using an AFC process. This process evaluates each transmission request on a case by case basis. SPP Tariff Administration was not granting any transmission requests that impacted the congested flowgate by 3 % or greater at the time of the Level 5 TLR.

12. Description of actions taken to avoid future hold/curtailments.

This TLR was caused by an outage. Due to this situation, no actions were taken to avoid future hold/curtailments.

13. Provide IDC generated Congestion Management Reports showing transaction curtailment list and Control Area NNL (network and native load) curtailment responsibility.

Congestion Management Reports for each issuance of the TLR have been reviewed and are archived in the IDC. These screen shots have not been included to reduce the size of this report.

14. Re-dispatch actions taken.

SPP EIS Market redispatch was implemented during the entire TLR event. Firm and non-firm Market Flow were reduced on the flowgate as reported in the TLR Event History and NERC TLR Log.

Event History

Issuing RC: SWPP
Flowgate: 6009 - COOPER_S
Event Begin: 2011-03-01 16:00
Event End: 2011-03-02 09:40
Event Duration: 17 Hours

| TLR Level | TLR Date | TLR Confirm Time | Run Time | Requested Relief | Remaining Relief | Relief Provided | Total Cuts | |
|------------------------------|------------------|------------------|---------------------|------------------|------------------|-----------------|------------|------|
| | | | | | | | Tags | MW |
| TLR Level 3A | 03/01/2011 16:00 | 03/01/2011 15:33 | 03/01/2011 15:31:52 | 191.0 | 0.0 | 191.1 | 8 | 653 |
| TLR Level 5B | 03/01/2011 16:20 | 03/01/2011 16:12 | 03/01/2011 16:10:02 | 250.0 | 0.0 | 256.6 | 64 | 339 |
| TLR Level 5A | 03/01/2011 17:00 | 03/01/2011 16:34 | 03/01/2011 16:27:33 | 219.0 | 0.0 | 308.1 | 12 | 1003 |
| TLR Level 5A | 03/01/2011 18:00 | 03/01/2011 17:32 | 03/01/2011 17:29:11 | 93.0 | 0.0 | 263.9 | 11 | 805 |
| TLR Level 5A | 03/01/2011 19:00 | 03/01/2011 18:32 | 03/01/2011 18:30:41 | 246.0 | 0.0 | 264.0 | 11 | 805 |
| TLR Level 5A | 03/01/2011 20:00 | 03/01/2011 19:27 | 03/01/2011 19:26:52 | 213.0 | 0.0 | 263.9 | 11 | 805 |
| TLR Level 5A | 03/01/2011 21:00 | 03/01/2011 20:27 | 03/01/2011 20:25:59 | 237.0 | 0.0 | 262.9 | 11 | 805 |
| TLR Level 5A | 03/01/2011 22:00 | 03/01/2011 21:29 | 03/01/2011 21:29:01 | 270.0 | 0.0 | 273.3 | 37 | 823 |
| TLR Level 5A | 03/01/2011 23:00 | 03/01/2011 22:28 | 03/01/2011 22:26:51 | 149.0 | 0.0 | 276.2 | 9 | 792 |
| TLR Level 5A | 03/02/2011 00:00 | 03/01/2011 23:28 | 03/01/2011 23:26:42 | 273.0 | 0.0 | 279.0 | 56 | 583 |
| TLR Level 5A | 03/02/2011 01:00 | 03/02/2011 00:30 | 03/02/2011 00:28:07 | 256.0 | 0.0 | 258.7 | 33 | 694 |
| TLR Level 5A | 03/02/2011 02:00 | 03/02/2011 01:27 | 03/02/2011 01:26:16 | 274.0 | 0.0 | 279.7 | 54 | 737 |
| TLR Level 5A | 03/02/2011 03:00 | 03/02/2011 02:29 | 03/02/2011 02:27:53 | 88.0 | 0.0 | 254.1 | 8 | 765 |
| TLR Level 5A | 03/02/2011 04:00 | 03/02/2011 03:28 | 03/02/2011 03:28:00 | 54.0 | 0.0 | 313.1 | 9 | 771 |
| TLR Level 5A | 03/02/2011 05:00 | 03/02/2011 04:28 | 03/02/2011 04:26:25 | 0.0 | 0.0 | 348.0 | 9 | 983 |
| TLR Level 5A | 03/02/2011 06:00 | 03/02/2011 05:27 | 03/02/2011 05:26:05 | 0.0 | 0.0 | 259.7 | 7 | 688 |
| TLR Level 3A | 03/02/2011 07:00 | 03/02/2011 06:30 | 03/02/2011 06:29:16 | 284.0 | 38.1 | 245.9 | 7 | 744 |
| TLR Level 3A | 03/02/2011 08:00 | 03/02/2011 07:29 | 03/02/2011 07:28:59 | 37.0 | 0.0 | 79.4 | 5 | 590 |
| TLR Level 3A | 03/02/2011 09:00 | 03/02/2011 08:26 | 03/02/2011 08:25:53 | 0.0 | 0.0 | 79.9 | 5 | 590 |
| TLR Level 0 | 03/02/2011 09:40 | 03/02/2011 09:29 | 03/02/2011 09:28:43 | 0.0 | 0.0 | 0.0 | 0 | 0 |

| | | | | | | | | | | | | | | | | | | | |
|-----------------|--------|------|--------------------------------------|---|--------------------------------|-------------------------------------|--------------------------------|-------------------------------------|-------------------------|---------------------------------|------|--------------|---------------------|----------------------|----------------------|-----|-----|-----|-----|
| Mar 01 22.28 | TLR 5A | NEXT | 2-NH 5-NM 5-NN Total | 3 / 0 1 / 0 3 / 0 7 / 0 | 200 14 288 502 | 61.6 2.0 39.8 103.4 | 200 14 288 502 | 61.6 2.0 39.8 103.4 | 0 0 0 0 | 0.0 0.0 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 23.1 0.0 110.0 | 23.1 0.0 110.0 | 414 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 133.1 | 133.1 | | | | |
| Mar 01 23.23 | TLR 5A | NEXT | 2-NH 5-NN 7-F Total | 3 / 0 1 / 0 50 / 0 54 / 0 | 200 100 93 393 | 61.6 13.6 19.1 94.3 | 200 100 93 393 | 61.6 13.6 19.1 94.3 | 0 0 0 0 | 0.0 0.0 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 32.9 0.9 124.9 | 32.9 0.9 124.9 | 519 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 158.7 | 158.7 | | | | |
| Mar 02 00.33 | TLR 5A | NEXT | 2-NH 5-NN 7-F Total | 2 / 0 2 / 0 25 / 0 30 / 0 | 150 125 29 304 | 48.6 16.9 6.0 71.5 | 150 125 29 304 | 48.6 16.9 6.0 71.5 | 0 0 0 0 | 0.0 0.0 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 17.1 0.2 115.9 | 17.1 0.2 115.9 | 372 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 134.2 | 134.2 | | | | |
| Mar 02 01.27 | TLR 5A | NEXT | 2-NH 7-F Total | 2 / 0 47 / 0 49 / 0 | 150 72 222 | 48.6 14.7 63.2 | 150 72 222 | 48.6 14.7 63.2 | 0 0 0 | 0.0 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 25.8 0.5 120.2 | 25.8 0.5 120.2 | 297 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 146.7 | 146.6 | | | | |
| Mar 02 02.29 | TLR 5A | NEXT | 2-NH Total | 2 / 0 2 / 0 | 150 150 | 48.6 48.6 | 150 150 | 48.6 48.6 | 0 0 | 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 11.8 0.0 110.0 | 11.8 0.0 110.0 | 325 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 121.8 | 121.8 | | | | |
| Mar 02 03.28 | TLR 5A | NEXT | 2-NH 5-NN Total | 2 / 0 1 / 0 3 / 0 | 150 6 156 | 48.6 0.8 49.4 | 150 6 156 | 48.6 0.8 49.4 | 0 0 0 | 0.0 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 89.9 0.0 110.0 | 89.9 0.0 110.0 | 399 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 179.9 | 179.9 | | | | |
| Mar 02 04.28 | TLR 5A | NEXT | 2-NH 5-NM 6-NN Total | 2 / 0 1 / 0 1 / 0 4 / 0 | 150 80 138 368 | 48.6 11.2 19.4 79.1 | 150 80 138 368 | 48.6 11.2 19.4 79.1 | 0 0 0 0 | 0.0 0.0 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 72.1 0.0 113.0 | 72.1 0.0 113.0 | 309 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 185.1 | 185.1 | | | | |
| Mar 02 05.27 | TLR 5A | NEXT | 2-NH 6-NN Total | 1 / 0 1 / 0 2 / 0 | 42 56 98 | 13.6 7.8 21.4 | 42 56 98 | 13.6 7.8 21.4 | 0 0 0 | 0.0 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 11.8 0.0 129.0 | 11.8 0.0 129.0 | 308 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 158.8 | 158.8 | | | | |
| Mar 02 06.30 | TLR 3A | NEXT | 6-NN Total | 2 / 0 2 / 0 | 100 100 | 20.3 20.3 | 100 100 | 20.3 20.3 | 0 0 | 0.0 0.0 | NONE | ED-2 | MISO FJM SWPP | 37.1 0.0 110.0 | 37.1 0.0 110.0 | 279 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 147.1 | 147.1 | | | | |
| Mar 02 07.29 | TLR 3A | NEXT | | | | NONE | | NONE | | | NONE | ED-2 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | 304 | N/A | N/A | N/A |
| | | | | | | | | | | | | ED-5 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | FIRM-7 | MISO FJM SWPP | 0.0 0.0 0.0 | 0.0 0.0 0.0 | | | | |
| | | | | | | | | | | | | Total | | 0.0 | 0.0 | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|-----------------|--------|---------|---------------|-------|---|-----|---|-----|---|-----|----|------|------|--------|-------|-----|-----|-----|-----|-----|-----|
| Mar 02 08:28 | TLR 3A | NEXT | 8-NN Total | 0 / 1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 75 | 10.5 | NONE | ED-2 | MISO | 0.0 | 0.0 | 254 | N/A | N/A | N/A |
| | | | | | | | | | | | | | | ED-6 | PJM | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | FIRM-7 | SWPP | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | MISO | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | PJM | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | SWPP | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | MISO | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | PJM | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | SWPP | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | Total | 0.0 | 0.0 | | | | |
| Mar 02 09:29 | TLR 0 | CURRENT | | | | | | | | | | | NONE | | | | | 0 | N/A | N/A | N/A |

TLR Schedule Totals

| Priority | Schedule | | | |
|--------------|-----------------------|-------------|-----------------------|-----------|
| | Total Tags Cut / Hold | IDC Cut MV | RC Cut Acknowledge MV | Hold MV |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 |
| 2 | 32 | 2168 | 2168 | 0 |
| 3 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 |
| 5 | 2 | 94 | 94 | 0 |
| 6 | 33 | 2516 | 2516 | 75 |
| 7 | 268 | 470 | 470 | 0 |
| Total | 335 | 5248 | 5248 | 75 |

TLR Market Flow Totals

| Market | Type | Market Relief | |
|--------------|-----------------------|---------------|---------------|
| | | IDC MV | RC Ackn MV |
| MISO | ED-2 | 412.8 | 412.7 |
| | ED-6 | 0.0 | 0.0 |
| | FIRM-7 | 0.0 | 0.0 |
| | Total MISO | 412.8 | 412.7 |
| PJM | ED-2 | 1.8 | 1.7 |
| | ED-6 | 0.0 | 0.0 |
| | FIRM-7 | 0.0 | 0.0 |
| | Total PJM | 1.8 | 1.7 |
| SWPP | ED-2 | 1904.2 | 1904.2 |
| | ED-6 | 33.0 | 33.0 |
| | FIRM-7 | 47.0 | 47.0 |
| | Total for SWPP | 1984.3 | 1984.2 |
| Total | | 2398.9 | 2398.6 |

| Date | Time | Category | Issue |
|----------|-------|------------------|--|
| 3/1/2011 | 15:10 | TLR - 5b Initial | PC 116%; notified NPPD TO (Bruce), MISO RC (Bill) MISO moving market due to MISO Tariff not able to honor sched; excluding external units IROL exceed 1509-1510 (1 min), 1511-1515 (4 min) |
| 3/1/2011 | 14:31 | TLR - 3a Initial | Issued TLR level 3A effective limit entered with exclude ext. units |
| 3/1/2011 | 15:25 | TLR - 5a Reissue | PC 72%; did not get firm curtailments; likely in good shape |
| 3/2/2011 | 05:29 | TLR - 3a Initial | PC 40%; |
| 3/2/2011 | 08:29 | TLR - 0 | PC 28%; Notified NPPD (Bruce) |