

MISO Investigation Report on the NERC TLR Level 5 Event
WAPA
Flowgate 16109: Leland Olds-Logan 230kV
December 9, 2009

Report submitted to NERC on: February 12, 2010

This report is submitted in accordance with the NERC Transmission Loading Relief (TLR) Investigation Procedure for the TLR events that occurred on Flowgate 16109 on December 9, 2009. This event resulted in curtailment of Firm transactions.

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

The definition of flowgate 16109 is listed below.

Monitored Facilities: Leland Olds-Logan 230kV line

2. Facility/Flow gate limitations and flow at the time the TLR was initiated:

There is a limit of 320 MVA on WAPA's Leland Olds-Logan 230kV line.

On December 9, 2009, a TLR 5 was required to reduce the real-time flows across the Leland Olds-Logan 230kV line FG 16109. The Dorsey-Forbes 500kV line (D602F) tripped at 05:02 EST. With this trip and the current outage of the Balta-McHenry 230kV outage, and with extreme cold weather through out the region the flows on Leland Olds-Logan needed to be curtailed via TLR to maintain flows below the 319 MVA limit.

At 19:20 EST WAPA requested a TLR 1 on Leland Olds-Logan 230kV on 12/08/09.

At 22:00 EST WAPA requested TLR 3 on FG 16109 to keep the flows below 319 MVA. Non-firm curtailments were adequate to maintain flows below the Leland olds-Logan limit of 319 MVA.

At 00:30 EST MISO/WAPA went to a TLR Level 1 due to decreasing load through out the region and decreasing flow on Leland Olds-Logan 230kV.

At 05:02 EST MHEB the Dorsey-Forbes (D602F) 500kV line tripped.

At 05:30 EST WAPA requested TLR 3 on FG 1610. Non-firm curtailments were adequate to maintain flows below the Leland olds-Logan set point of 319 MVA.

At 07:35 EST, MISO/WAPA issued a TLR 5A for across 08:00 EST on the Leland Olds-Logan 230kV FG 16109.

At 08:30 EST, the Dorsey-Forbes 500kV line returned to service.

At 09:00 EST MISO/WAPA issued TLR 3 on FG 16109 to keep the flows below 319 MVA.

At 14:23 MISO/WAPA ended the TLR and went to a TLR level 0.

As the NERC IDC showed insufficient non-firm schedule curtailments to relieve flows to the necessary levels, TLR 5 was issued for 1 continuous issuance.

3. TLR Level 5 issuance information, timing (EST), firm tag information obtained for flow gate #6003 December 9, 2009:

TLR LEVEL	TIME (EST)	Firm Transaction / Curtailment Information	NNL Reduction Requirement
1	12/8 19:20	No firm curtailments	None
3A	22:00	No firm curtailments	None
3A	23:00	No firm curtailments	None
3A	00:00	No firm curtailments	None
1	00:30	No firm curtailments	None
3B	05:30	No firm curtailments	None
3A	07:00	No firm curtailments	None
5A	08:00	1 tag of (7-F & 7-FN) = 17 MW schedules curtailed to provide 9.3 MW relief	MDU – 2.4 MW WAPA – 17.3 MW
3A	09:00	No firm curtailments	None
1	09:30	No firm curtailments	None
0	14:23	Terminated TLR	None

NNL Mitigation:

- MDU had NNL obligation for this TLR 5. They manually redispatched Glendive peakers up and Heskett Generation down to remove their NNL from the flowgate.
- WAPA had NNL obligation for this TLR 5. They manually redispatched Garrison peakers up and Leland Olds Generation down to remove their NNL from the flowgate.

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

Significant Forced Transmission Outages:

Balta-McHenry 230kV
Dorsey-Forbes 500kV (Tripped)

Significant Generator Outages:

None

System Condition Summary:

The entire region through out the Dakotas, MHEB and Sask Power experienced high loads due to extreme cold temperatures which caused heavy loading on the Leland Olds-Logan 230kV line. The trip of the Dorsey-Forbes 500kV line and the Balta-McHenry 230kV line outage also increased loading on the Leland Olds-Logan 230kV line.

5. Procedures implemented prior to hold/curtailment:

The phase shifter B10T was reduced from South to North into Sask power prior to implementing TLR in order to try and control loading.

6. Compare Complete Transaction Curtailment List with the Whole Transaction List as generated by the IDC, before and after curtailments:

Firm transactions impacting the flow gate by 5% or greater were partially curtailed and reloaded.

7. Known Transactions not in the IDC and actions taken:

There were no known transactions not in the IDC at the time this TLR was in effect that were impacting this flow gate.

8. RCIS or other system messages:

Information was provided to NERC Reliability Coordinators via the NERC IDC. The IDC automatically sends TLR Level information to the RCIS. Curtailment information was communicated to the MISO control areas via the MISO MCN and ICCS messaging systems.

9. State estimator snapshots and security analysis including contingency analysis or stability analysis along with any other recorded data indicating the need for TLR:

None – This was a forced outage event.

10. ATC Limitations before, during, and after the event:

None – this was a real-time loading event.

11. Description of actions taken to avoid future hold/curtailments:

None – This was a forced outage event along with extreme temperatures causing very heavy loading.

12. Re-dispatch actions taken:

There were no manual generation re-dispatch actions taken during this event outside of the NNL requirements listed above.

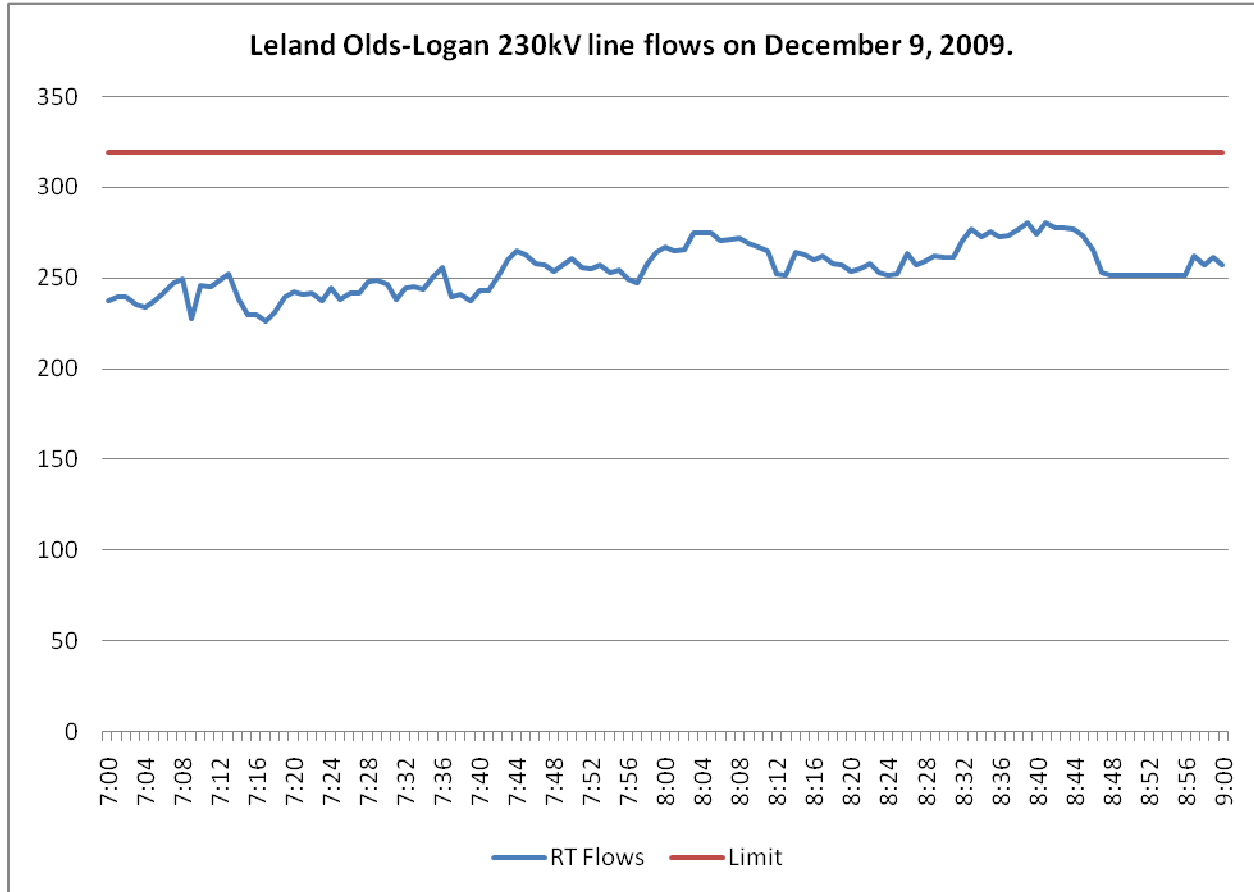
13. If Firm transaction curtailments took place, description of Transactional Contribution Factor calculation and results as well as how necessary relief was obtained through network service and native load contributions:

Firm schedules were curtailed as detailed in section 3 above.

14. Other options considered before/during to avoid hold/curtailment:

The phase shifter B10T was reduced from South to North into Sask power prior to implementing TLR in order to try and control loading.

15. The following chart identifies the flowgate loading for the TLR level 5 event:



16. Lessons Learned

The WAPA and MISO Operators reacted appropriately to the heavy loading on the Leland Olds-Logan 230kV line.

WAPA and MISO will continue to work closely to ensure the Leland Olds-Logan 230kV limit is respected.