

SPP TLR 5 Investigation Report
Temp 13 Flowgate 16129
(Ft. Smith - Arkhoma 161 kV for the loss of AES – Tarby 161 kV)
TLR Level 5: December 19, 2009
Report Issued: December 21, 2009

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 16129 on December 19, 2009. Flowgate 16129 is an SPP flowgate. The Level 5 TLR was in effect from 13:10 until 22:00 CST on December 19, 2009. Projected post contingent flows on the Ft. Smith – Arkhoma 161 kV line exceeded the SOL. The flowgate was created to control flow on the Ft. Smith – Arkhoma 161 kV line for the outage of the AES – Tarby 161 kV line. A trip of the contingency pushes the output of AES generation onto the 161 kV line. The parallel path was cut-off due to the scheduled outage of Massard – White Side 161 kV line.

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

At the time the Level 5A TLR was issued, the Limiting Element was rated at 335 MVA. Flow on the Limiting Element was 266 MVA. Flow on the Contingent Element was 188 MVA. The LODF was approximately 45%. Post-contingent flow on the Limiting Element was approximately 351 MW.

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 on pages 3-6.

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

There were no unplanned outages that contributed to this TLR.

5. Procedures implemented prior to hold/curtailment.

There were no non-firm transactions or market flow that impacted the flowgate by more than 5%. The TLR was escalated to a Level 5 in order to curtail firm transactions and firm market flow 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, see page 7. Times in the RC Log are CST.

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

The next day study process did not indicate an issue with this flowgate based upon conditions at the time of the daily peak.

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, see page 8.

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 a combination of generation patterns, load, and system flows during the scheduled outage of Massard – White Side 161 kV. The initial rating of 335 MVA was updated to 438 MVA following confirmation from OKGE.

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 Flows were reduced on the flowgate as reported in the TLR Event History and NERC TLR Log on pages 3-6. SPP RC issued a directive to SPA to run two R.S. Kerr units a full load for relief.

TLR Event History

16129 - Temporary 16 - FTSARKAESTAR

| Status | TLR Level | TLR Date (CST) | TLR Confirm Time (CST) | Run Time (CST) | Requested Relief | Remaining Relief | Relief Provided | Total Cuts | |
|----------------------------|-----------|------------------|------------------------|---------------------|------------------|------------------|-----------------|------------|-----|
| | | | | | | | | Tags | MW |
| SUPERSEDED | 3B | 12/19/2009 11:55 | 12/19/2009 11:47 | 12/19/2009 11:46:49 | 60.0 | 60.0 | 0.0 | 0 | 0 |
| SUPERSEDED | 3A | 12/19/2009 13:00 | 12/19/2009 12:26 | 12/19/2009 12:26:02 | 0.0 | 0.0 | 0.0 | 0 | 0 |
| SUPERSEDED | 5A | 12/19/2009 13:10 | 12/19/2009 12:54 | 12/19/2009 12:52:13 | 51.0 | 0.0 | 51.1 | 4 | 77 |
| SUPERSEDED | 5A | 12/19/2009 14:00 | 12/19/2009 13:30 | 12/19/2009 13:29:09 | 38.0 | 0.0 | 38.2 | 4 | 53 |
| SUPERSEDED | 5A | 12/19/2009 15:00 | 12/19/2009 14:26 | 12/19/2009 14:26:11 | 36.0 | 0.0 | 36.2 | 5 | 51 |
| SUPERSEDED | 5A | 12/19/2009 16:00 | 12/19/2009 15:32 | 12/19/2009 15:26:30 | 47.0 | 0.0 | 47.1 | 4 | 68 |
| SUPERSEDED | 5A | 12/19/2009 17:00 | 12/19/2009 16:26 | 12/19/2009 16:26:15 | 68.0 | 0.0 | 68.0 | 4 | 104 |
| SUPERSEDED | 5A | 12/19/2009 18:00 | 12/19/2009 17:33 | 12/19/2009 17:30:15 | 129.0 | 0.0 | 129.1 | 4 | 199 |
| SUPERSEDED | 5A | 12/19/2009 19:00 | 12/19/2009 18:26 | 12/19/2009 18:26:32 | 43.0 | 0.0 | 43.1 | 5 | 68 |
| SUPERSEDED | 5A | 12/19/2009 20:00 | 12/19/2009 19:27 | 12/19/2009 19:26:52 | 37.0 | 0.0 | 37.2 | 4 | 50 |
| SUPERSEDED | 5A | 12/19/2009 21:00 | 12/19/2009 20:29 | 12/19/2009 20:28:52 | 0.0 | 0.0 | 9.0 | 0 | 0 |
| SUPERSEDED | 3A | 12/19/2009 22:00 | 12/19/2009 21:26 | 12/19/2009 21:25:53 | 0.0 | 0.0 | 0.0 | 0 | 0 |
| SUPERSEDED | 3A | 12/19/2009 23:00 | 12/19/2009 22:27 | 12/19/2009 22:26:21 | 1.0 | 0.0 | 1.0 | 0 | 0 |
| TERMINATED | 0 | 12/19/2009 23:25 | 12/19/2009 23:14 | 12/19/2009 23:14:19 | 0.0 | 0.0 | 0.0 | 0 | 0 |

12/21/2009 12:39:46 (CST)

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Event Summary

FILE SAVED AS: SWPP_16129_20091219_1155.htm

| | | | |
|----------------------|-------------------------------------|-------------------------------------|---------------------------------------|
| Incident: | SWPP_16129_20091219_1155 | Date: 12/19/2009 | Reliability Coordinator: SWPP |
| Initial Conditions: | increasing flow | | |
| Flowgate: | 16129 - Temporary 16 - FTSARKAESTAR | Rating: 438 | LODF: 45.39% |
| TLR Direction: | Normal | | |
| Effective StartTime: | 12/19/2009 11:55 | Effective EndTime: 12/19/2009 23:25 | TLR Duration: 11 Hours and 30 Minutes |

TLR Actions

| Confirm Time | Level | Effective Hour | Priority | Schedule | | | | | | | | NNL Relief | | | Market Relief | | | | Flow | | | TLR Action Comments |
|--------------|--------|----------------|----------|-----------------------|---------|--------|--------------------|-----|------|-----|------|-------------|------------|------|---------------|--------|------------|---------|------------|------------|-----|---------------------|
| | | | | Total Tags Cut / Hold | IDC Cut | | RC Cut Acknowledge | | Hold | | CA | IDC MW | RC Ackn MW | Type | Mkt | IDC MW | RC Ackn MW | Current | Post Cont. | Cont. Flow | | |
| MW | Relief | MW | Relief | | MW | Relief | | | | | | | | | | | | | | | | |
| Dec 19 11:47 | TLR 3B | CURRENT | | NONE | | | | | | | | NONE | | | ED-2 | SWPP | 0.0 | 0.0 | 285 | 378 | 208 | N/A |
| | | | | | | | | | | | | | | ED-8 | SWPP | 0.0 | 0.0 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | NEXT | | NONE | | | | | | | | NONE | | | ED-2 | SWPP | 0.0 | 0.0 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Dec 19 12:28 | TLR 3A | NEXT | | NONE | | | | | | | | NONE | | | ED-2 | SWPP | 0.0 | 0.0 | 275 | 365 | 200 | N/A |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Dec 19 12:54 | TLR 5A | NEXT | 7-F | 4 / 0 | 77 | 5.4 | 77 | 5.4 | 0 | 0.0 | NONE | ED-2 | SWPP | 0.0 | 0.0 | 266 | 351 | 188 | N/A | | | |
| | | | Total | 4 / 0 | 77 | 5.4 | 77 | 5.4 | 0 | 0.0 | | ED-8 | SWPP | 20.0 | 20.0 | | | | | | | |
| | | | | | | | | | | | | FIRM-7 | SWPP | 25.7 | 25.7 | | | | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | SWPP | 0.0 | 0.0 | | | | | | | |
| | | | | | | | | | | | | Total | | 45.7 | 45.7 | | | | | | | |
| Dec 19 13:30 | TLR 5A | NEXT | 7-F | 4 / 0 | 53 | 3.8 | 53 | 3.8 | 0 | 0.0 | NONE | ED-2 | SWPP | 0.0 | 0.0 | 247 | 327 | 178 | N/A | | | |
| | | | Total | 4 / 0 | 53 | 3.8 | 53 | 3.8 | 0 | 0.0 | | ED-8 | SWPP | 34.0 | 34.0 | | | | | | | |
| | | | | | | | | | | | | FIRM-7 | SWPP | 0.4 | 0.4 | | | | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | SWPP | 0.0 | 0.0 | | | | | | | |
| | | | | | | | | | | | | Total | | 34.4 | 34.4 | | | | | | | |
| Dec 19 14:28 | TLR 5A | NEXT | 7-F | 5 / 0 | 51 | 3.6 | 51 | 3.6 | 0 | 0.0 | NONE | ED-2 | SWPP | 0.0 | 0.0 | 239 | 313 | 165 | N/A | | | |
| | | | Total | 5 / 0 | 51 | 3.6 | 51 | 3.6 | 0 | 0.0 | | ED-8 | SWPP | 32.6 | 32.6 | | | | | | | |
| | | | | | | | | | | | | FIRM-7 | SWPP | 0.0 | 0.0 | | | | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | SWPP | 0.0 | 0.0 | | | | | | | |
| | | | | | | | | | | | | Total | | 32.6 | 32.6 | | | | | | | |
| Dec 19 15:32 | TLR 5A | NEXT | 7-F | 4 / 0 | 68 | 4.8 | 68 | 4.8 | 0 | 0.0 | NONE | ED-2 | SWPP | 0.0 | 0.0 | 252 | 323 | 158 | N/A | | | |
| | | | Total | 4 / 0 | 68 | 4.8 | 68 | 4.8 | 0 | 0.0 | | ED-8 | SWPP | 12.0 | 12.0 | | | | | | | |
| | | | | | | | | | | | | FIRM-7 | SWPP | 30.3 | 30.3 | | | | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | SWPP | 0.0 | 0.0 | | | | | | | |
| | | | | | | | | | | | | Total | | 42.3 | 42.3 | | | | | | | |
| Dec 19 16:28 | TLR 5A | NEXT | 7-F | 4 / 0 | 104 | 7.3 | 104 | 7.3 | 0 | 0.0 | NONE | ED-2 | SWPP | 0.0 | 0.0 | 283 | 358 | 162 | N/A | | | |
| | | | Total | 4 / 0 | 104 | 7.3 | 104 | 7.3 | 0 | 0.0 | | ED-8 | SWPP | 4.0 | 4.0 | | | | | | | |
| | | | | | | | | | | | | FIRM-7 | SWPP | 56.7 | 56.7 | | | | | | | |
| | | | | | | | | | | | | FIRM-CREDIT | SWPP | 0.0 | 0.0 | | | | | | | |
| | | | | | | | | | | | | Total | | 60.7 | 60.7 | | | | | | | |

| | | | | | | | | | | | | | | | | | | | |
|-----------------|--------|---------|---------------------|-----------------------|-------------------|---------------------|-------------------|---------------------|---------------|-------------------|------|---|------------------------------|--|--|-----|-----|-----|-----|
| Dec 19 17:33 | TLR 5A | NEXT | 7-F Total | 4 / 0 4 / 0 | 199 199 | 14.3 14.3 | 199 199 | 14.3 14.3 | 0 0 | 0.0 0.0 | NONE | ED-2 ED-8 FIRM-7 FIRM-CREDIT Total | SWPP SWPP SWPP SWPP | 0.0 0.0 114.8 0.0 114.8 | 0.0 0.0 114.8 0.0 114.8 | 296 | 367 | 158 | N/A |
| Dec 19 18:26 | TLR 5A | NEXT | 7-F Total | 5 / 0 5 / 0 | 68 68 | 4.9 4.9 | 68 68 | 4.9 4.9 | 0 0 | 0.0 0.0 | NONE | ED-2 ED-8 FIRM-7 FIRM-CREDIT Total | SWPP SWPP SWPP SWPP | 0.0 0.0 38.3 0.0 38.3 | 0.0 0.0 38.3 0.0 38.3 | 299 | 367 | 150 | N/A |
| Dec 19 19:27 | TLR 5A | NEXT | 7-F Total | 4 / 0 4 / 0 | 50 50 | 3.6 3.6 | 50 50 | 3.6 3.6 | 0 0 | 0.0 0.0 | NONE | ED-2 ED-8 FIRM-7 FIRM-CREDIT Total | SWPP SWPP SWPP SWPP | 0.0 8.0 25.6 0.0 33.6 | 0.0 8.0 25.6 0.0 33.6 | 289 | 354 | 144 | N/A |
| Dec 19 20:29 | TLR 5A | NEXT | NONE | | | | | | | | NONE | ED-2 ED-8 FIRM-7 FIRM-CREDIT Total | SWPP SWPP SWPP SWPP | 0.0 9.0 0.0 0.0 9.0 | 0.0 9.0 0.0 0.0 9.0 | 269 | 341 | 160 | N/A |
| Dec 19 21:26 | TLR 3A | NEXT | NONE | | | | | | | | NONE | ED-2 ED-8 FIRM-7 Total | SWPP SWPP SWPP | 0.0 0.0 0.0 0.0 | 0.0 0.0 0.0 0.0 | 284 | 367 | 184 | N/A |
| Dec 19 22:27 | TLR 3A | NEXT | NONE | | | | | | | | NONE | ED-2 ED-8 FIRM-7 Total | SWPP SWPP SWPP | 0.0 1.0 0.0 1.0 | 0.0 1.0 0.0 1.0 | 278 | 366 | 194 | N/A |
| Dec 19 23:14 | TLR 0 | CURRENT | NONE | | | | | | | | NONE | NONE | | | 261 | 346 | 189 | N/A | |

TLR Schedule Totals

| Priority | Schedule | | | |
|--------------|--------------------------|---------------|-----------------------------|------------|
| | Total Tags Cut / Hold | IDC Cut MW | RC Cut Acknowledge MW | Hold MW |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 |
| 7 | 34 | 670 | 670 | 0 |
| Total | 34 | 670 | 670 | 0 |

TLR Market Flow Totals

| Market | Type | Market Relief | |
|----------------|--------|---------------|------------|
| | | IDC MW | RC Ackn MW |
| SWPP | ED-2 | 0.0 | 0.0 |
| | ED-6 | 120.6 | 120.6 |
| | FIRM-7 | 291.8 | 291.8 |
| Total for SWPP | | 412.3 | 412.4 |
| Total | | 412.3 | 412.4 |

| | A | B | C | D | E |
|----|---|----------|---|-------------|---|
| 1 | Reliability Log for December, 19 | | | 2009 | |
| 2 | Time | Initials | Comments | | |
| 3 | 1146 | AH | Issued TLR 3B on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 4 | 1226 | AH | Issued TLR 3A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 5 | 1254 | AH | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 6 | 1330 | AH | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 7 | 1426 | AH | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 8 | 1526 | AH | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 9 | 1626 | AH | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 10 | 1730 | AH | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 11 | 1806 | WRG | OKGE called RSS event #4490 on Muskogee 4 ORF. | | |
| 12 | 1813 | WRG | Issued SPA Directive to Bring on 2 RS Kerr units to full load for relief on Temp #16 flgt #16129. | | |
| 13 | 1826 | WRG | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 14 | 1926 | WRG | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 15 | 2016 | WRG | Released Directive Issued to SPA to run 2 Units at full load at RS Kerr.. | | |
| 16 | 2028 | WRG | Issued TLR 5A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 17 | 2125 | WRG | Issued TLR 3A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 18 | 2226 | WRG | Issued TLR 3A on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 19 | 2314 | WRG | Issued TLR 0 on Temp 16,FtsArkAesTar, flgt#16129 | | |
| 20 | | | | | |
| 21 | | | | | |

TEMP16_16129 - 12/19/09

— Post Cont. — Initial SOL

