

1717 Wakonade Drive
Welch, MN 55089

800.895.4999
xcelenergy.com



SEP 17 2018

L-PI-18-053
10 CFR 50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Prairie Island Nuclear Generating Plant, Unit 2
Docket No. 50-306
Renewed Facility Operating License No. DPR-60

Licensee Event Report 50-306/2018-001-01, Automatic Actuation of Emergency Diesel Generator D5

References: 1) Letter from Northern States Power Company, a Minnesota corporation (NSPM), d/b/a Xcel Energy to Document Control Desk, "LER 50-306/2018-001-00, Automatic Actuation of Emergency Diesel Generator D5". (ADAMS Accession ML18197A413)

Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), encloses a revised Licensee Event Report (LER) 50-306/2018-001-01, Automatic Actuation of Emergency Diesel Generator D5. This LER is a revision to Reference 1, which was submitted on July 16, 2018. This revision incorporates changes based on the revised Root Cause Evaluation.

If there are any questions or if any additional information is needed, please contact Frank Sienczak, at 612-342-8987.

Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

A handwritten signature in black ink that reads 'Scott Sharp'. The signature is fluid and cursive.

Scott Sharp
Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company – Minnesota

Enclosure

cc: Regional Administrator, Region III, USNRC
Project Manager, Prairie Island Nuclear Generating Plant, USNRC
Resident Inspector, Prairie Island Nuclear Generating Plant, USNRC
State of Minnesota

ENCLOSURE

Licensee Event Report 50-306/2018-001-01

5 Pages Follow



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

| | | |
|---|--------------------------------------|--------------------------|
| 1. FACILITY NAME Prairie Island Nuclear Generating Plant Unit 2 | 2. DOCKET NUMBER 05000-306 | 3. PAGE 1 OF 5 |
|---|--------------------------------------|--------------------------|

4. TITLE
Automatic Actuation of Emergency Diesel Generator D5

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---------------|-----|------|---------------|-------------------|---------|----------------|-----|------|------------------------------|---------------|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO. | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 5 | 17 | 2018 | 2018 | - 001 | - 01 | 9 | 17 | 2018 | FACILITY NAME | 05000 |
| | | | | | | | | | | DOCKET NUMBER |
| | | | | | | | | | | 05000 |

| 9. OPERATING MODE | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) | | | |
|-------------------|---|---|--|---|
| Unit 2 Mode 1 | <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| | <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| | <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| | <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| 10. POWER LEVEL | <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| | <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| | <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> 73.77(a)(1) |
| | <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | <input type="checkbox"/> 73.77(a)(2)(i) |
| | <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(vii) | <input type="checkbox"/> 73.77(a)(2)(ii) |
| | | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> OTHER Specify in Abstract below or in NRC Form 366A | |

12. LICENSEE CONTACT FOR THIS LER

| | |
|------------------------------------|--|
| LICENSEE CONTACT Frank Sienczak | TELEPHONE NUMBER (Include Area Code) 612-342-8987 |
|------------------------------------|--|

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
| | | | | | | | | | |

| 14. SUPPLEMENTAL REPORT EXPECTED | 15. EXPECTED SUBMISSION DATE | | | |
|--|--|-------|-----|------|
| <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) | <input checked="" type="checkbox"/> NO | MONTH | DAY | YEAR |
| | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On May 17, 2018, at 11:15 Central Daylight Time (CDT), with Unit 2 in Mode 1 at 100% power, the station experienced an auto-start of Emergency Diesel Generator (EDG), D5. The Bus 25 Potential Transformer fuse drawer was opened by a supplemental worker, causing Breaker 25-16 to open and de-energize Bus 25. Operators were able to manually close the EDG D5 output breaker to re-energize Bus 25. All equipment functioned as designed. EDG D5 was restored to a normal condition on May 17, 2018, at 16:44. This event was reported in accordance with 10 CFR 50.72(b)(3)(iv)(A) as an event that results in a valid actuation of the EDG.

The Direct Cause of this event was that the Worker opened FU/B25 25-16 POT "BUS 25 POT TO 25 LOAD SEQ PH AB and CB FUSES" (Human Performance). The Root Cause was that the risk of performing the Prairie Island Open Phase Project online with Bus 25 energized was not recognized and understood by the organization.

Immediate Action taken in the field placed the equipment in a safe condition and investigation efforts were completed to identify the direct cause of the condition and restoring power to Bus 25.

Corrective Actions include, develop and execute a targeted observation initiative to drive improvement in walk down rigor for Design Engineering, Maintenance Planning and Operations Planning. Tagging procedure was revised to specify the requirements of the meeting required for clearances associated with modifications. POT drawers were labeled with equipment ID. Open action to install locking device and caution to instruct operator approval prior to opening drawer and contain a physical barrier such as a lock, zip tie or screws to discourage opening.



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOF-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. LER NUMBER | | |
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| | | YEAR | SEQUENTIAL NUMBER | REV NO. |
| Prairie Island Nuclear Generating Plant Unit 2 | 05000-306 | 2018 | - 001 | - 01 |

NARRATIVE

DESCRIPTION OF EVENT

On May 17, 2018 at 11:15 Central Daylight Time (CDT), with Unit 2 in Mode 1 at 100% power, the station experienced an auto-start of Emergency Diesel Generator¹ (EDG), D5. During the 4kV² Bus Modification for the Open Phase project, installation activities were being performed by supplemental workers in the Bus 25 room. During the performance of work activities, the Bus 25 Potential Transformer (PT) fuse drawer was opened. The circuits associated with this PT drawer provide the voltage signal to the Bus 25 Load Sequencer undervoltage relays. With the PT drawer open, degraded, under voltage and loss of voltage signals were detected. An actual abnormal voltage condition did not exist prior to opening the PT drawer. This caused Breaker 25-16 to open and de-energized Bus 25.

This event was initiated by human error, whereby a supplemental worker took action to open the PT drawer in an effort to complete work activities. The worker believed the component was isolated as part of the work clearance but did not perform adequate verification to ensure that Fuse/Bus 25 Potential Transformer (FU/B25 25-16POT) was included on the tag-out list prior to taking action. The crew had reviewed the copy of a tag affixed to fuses removed from Fuse/ 2RY Potential Transformer (FU/2RY 25-16POT) (included in the tag-out list and located in cubicle 25-14), noted the "25-16" in the Equipment ID and were in a mindset that the fuses they observed were from the equipment they were about to manipulate. The equipment ID for the PT drawer in cubicle 25-16 was not labeled and the worker believed the fuses were for the PT drawer. However, this PT drawer was actually FU/B25 25-16POT which senses power to Bus 25.

As a result, when the PT drawer above Breaker 25-16 was opened, degraded voltage, undervoltage, and loss of voltage signals were detected and the Load Sequencer proceeded with the voltage restoration program. This program gives a trip signal to all source breakers. Upon receipt of the trip signal, breaker 25-5 – "CT12 Source to Bus 25" opened as designed and the Load Sequencer performed as expected to re-energize the bus via the D5 EDG output breaker (25-2) approximately 8 seconds later. However, because the PT Drawer remained open after the completion of sequencing, voltage restoration to Bus 25 was not indicated to the Load Sequencer. The Load Sequencer then opened EDG D5 output breaker BKR 25-2 as designed. With no power to Bus 25, Bus 25 was inoperable. Operators were able to manually close the D5 EDG output breaker 25-2 to re-energize Bus 25. All equipment functioned as designed.

Bus 25 was re-energized from EDG D5. Technical Specification (TS) 3.8.9. Condition A, Distribution Systems- Operating was exited on May 17, 2018 at 12:07 (52 minutes). Bus 25 was restored to offsite source on May 17, 2018 at 15:30. Operations shutdown and secured EDG D5 on May 17, 2018 at 16:44.

This event was reported on May 17, 2018 at 18:33 CDT, (Event Notification (EN) 53408), in accordance with 10 CFR 50.72(b)(3)(iv)(A) as an event that results in a valid actuation of the EDG.

EVENT ANALYSIS

EDG, is a backup to the normal standby AC power supply, it is capable of sequentially starting and supplying the power requirements to one of the redundant sets of engineered safety features for the associated reactor Unit. In addition, in the event of a station blackout (SBO) condition, each EDG is capable of sequentially starting and supplying the power requirements of the hot shutdown (Mode 3, Hot Standby in TS) loads for its unit, as well as the essential loads of the blacked out unit, through the use of manual bus tie breakers interconnecting the 4kV Buses.

¹ EIIS System Code – EK
² EIIS System Code – EA



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Plant management incorrectly determined that the work could be performed online (as written and planned) and removed the modification for the Open Phase project from the 2R30 outage scope. The risk assessment, job planning and preparation of the work order operation allowed the workers to enter the field with an approved work order and clearance that was inadequate for the required work. Reviews, consultations and walkdowns failed to recognize that the work order activities placed the workers in the immediate vicinity of energized 4kV equipment that interfered with the proposed cable routing per the design drawing. Adequate cable routing detail was not included in the work order because the cubicle internals were not considered in the planning walkdown. The work order was planned at risk and completed prior to the approval of PT design. This lack of detail contributed to a less than adequate understanding of the scope of work by the Operations Planner when completing the clearance tag-out and plant impact statement. The Operations Planner did not identify the clearance as "exceptional" or perform a walkdown to identify all hazards associated with the work.

A walkdown should have been performed and the isolation should have been made both complex and exceptional in accordance with the fleet tagging procedure. A clearance is considered exceptional when the normal requirements of the tagging process cannot be fully implemented. Permission to work must be approved by Operations Management and documented in the clearance order. An explanation for the reason the clearance is exceptional and the compensatory actions stated that a face to face brief with Operations is required prior to signing the clearance. If energy is discovered during the zero energy test, stop work and contact Operations.

Operators responded to the alarm response procedures addressing the Bus 25 undervoltage condition and transitioned to re-energizing the 4kV, Bus 25 per the Abnormal Operating Procedure (AOP) using D5 EDG. The PT fuse drawer was verified to be re-installed and applicable relays reset on the Bus 25 Load Sequencer. The Bus 25 Load Sequencer was returned to service per the associated AOP. Operators shut down EDG D5 per Operating Procedures. This event is being reported under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in valid/automatic actuation of an EDG.

Bus 25 is required to be operable in modes 1 through 4 by TS 3.8.9, Distribution Systems – Operating, and in modes 5 and 6 when required by TS 3.8.10, Distribution Systems - Shutdown. The Bus 25 Voltage Instrumentation is required to be operable by TS 3.3.4, 4kV Safeguards Bus Voltage Instrumentation, in modes 1 through 4 or when the associated EDG is required to be operable by LCO 3.8.2, AC Sources - Shutdown.

SAFETY SIGNIFICANCE

There were no radiological, environmental, or industrial impacts associated with the auto-start of EDG D5, and the health and safety of the public were not affected. The plant was placed in an unplanned TS under 3.8.1 Condition D, for having both EDG D5 and 2RY (Offsite AC source) inoperable. Bus 25 was de-energized requiring entry into TS 3.8.9 Condition A, Distribution Systems- Operating on May 17, 2018 at 11:15. Operators were able to manually close the EDG D5 output breaker to re-energize Bus 25. Bus 25 was re-energized from EDG D5. TS 3.8.9. Condition A, was exited on May 17, 2018 at 12:07 (52 minutes). Bus 25 was restored to offsite source on May 17, 2018 at 15:30. Operations shut down and secured EDG D5 on May 17, 2018 at 16:44.

There was a momentary loss of component cooling on the loss of 21 Component Cooling (CC) pump due to low pressure in the CC system. The 22 CC pump auto started as designed and restored system pressure with a minimum impact on the CC system.

This event was reportable per 10 CFR 50.72(b)(3)(iv)(A) as an event that results in a valid actuation of the EDG. The auto-start of the EDG D5 did not challenge nuclear safety as all plant systems responded as designed. This event did not affect Bus 26 and there was no auto start of EDG D6. Both Bus 26 and EDG D6 were operable during this event. As a result, there was no loss of safety function.



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CAUSE(s)

Direct Cause:

Worker opened FU/B25 25-16 POT "BUS 25 POT TO 25 LOAD SEQ PH AB and CB FUSES" (Human Performance).

Root Cause:

The risk of performing the Prairie Island Open Phase Project online with Bus 25 energized was not recognized and understood by the organization.

Contributing Cause:

The Bus 25 POT drawer is not labeled with an Equipment ID and appropriate barriers to prevent the drawer from unintended manipulation.

CORRECTIVE ACTION(s)

Immediate action:

1. Actions that were taken in the field placed the equipment in a safe condition and investigation efforts were completed to identify the direct cause of the condition and restoring power to Bus 25.
2. A formal stop work order was established for the Open Phase project until further analysis reveals underlying causes.
3. This work was transitioned to the online schedule after originally scheduled to be performed in refueling outage 2R30, actions were taken to review other similar work originally scheduled for offline performance to ensure the adequacy of the work plan for safe and event free performance.

Actions to correct this event include:

1. Develop and execute a targeted observation initiative to drive improvement in walk down rigor for Design Engineering, Maintenance Planning and Operations Planning.
2. Provide a walk down case study with Maintenance and Operations Planners to reinforce standards and improve walk down rigor.
3. Tagging procedure was revised to specify the requirements of the meeting required for clearances associated with modifications.
4. Revise supplemental oversight procedures to implement a review committee for the Supplemental oversight plans.
5. Implement a program to change nuclear business unit work force behaviors for awareness, identification and mitigation of risk, including revision to relevant governance and the nuclear management model, to more proactively identify and mitigate risk in plant activities.
6. POT drawers were labeled with equipment ID. Open action to install locking device and caution to instruct operator



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approval prior to opening drawer and contain a physical barrier such as a lock, zip tie or screws to discourage opening.

PREVIOUS SIMILAR EVENTS

A review of the Prairie Island LERs for the past five years found no other similar events.