



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 100 AND 93 TO

FACILITY OPERATING LICENSE NOS. DPR-42 AND DPR-60

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-282 AND 50-306

1.0 INTRODUCTION

By letter dated August 3, 1992, Northern States Power Company (NSP or the licensee) requested amendments to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2. The proposed amendments would provide a one-time extension of the surveillance test interval for the integrated safety injection (SI) with loss of offsite power test.

2.0 DISCUSSION AND EVALUATION

Background

TS Section 4.6.A.3.b.1 requires periodic verification that a simulation of loss of offsite power event, coincident with a safety injection signal, will result in the de-energization and load shedding of each emergency bus, followed by automatic starting and loading of the associated diesel. This test is referred to as the integrated safety injection (SI) test. It is required for each 4160 v.a.c. safeguards bus at 18-month intervals and performed during each refueling outage.

On July 27, 1992, the licensee determined, as a result of an assessment of an operating experience at a similar facility (Ref: Kewaunee LER No. 92-011 and Information Notice 90-040), that, for Safeguards Bus 16 of Unit 1, a portion of the integrated SI test had not been demonstrated with the required 18 month plus 25% test interval. The integrated SI sequence resulting from a loss or degradation of bus voltage, includes the following (Ref: USAR Section 8.4.2):

1. Start associated diesel generator.
2. Trip all associated source breakers to the bus.
3. Close breaker to offsite source if voltage is present, if not available;
4. Close tie breaker to other unit if voltage is present, if not;

5. Shed designated loads; then
6. Close diesel generator breaker if voltage and frequency meet permissive criteria.
7. Sequence emergency loads to bus.

The portion of the test which had not been demonstrated during previous refueling outages was the proper tripping of the Bus 16 source breakers (item 2). Also, it was determined that the test interval would expire for Bus 26 in Unit 2 on August 5, 1992. The licensee requested and received temporary relief from Section 4.6.A.3.b.1 pending issuance of an emergency TS amendment.

Proposed Changes

It is not practical to perform the required testing during other than cold shutdown conditions. The proposed amendment provides one-time, temporary relief. The licensee proposes to add a footnote to TS Section 4.6.A.3.b.1 stating "Demonstration of the proper tripping of the main supply and tie breakers on emergency busses may be delayed, on a one time basis, until the Unit 1 and 2 outages scheduled for the Fall of 1992."

Coincident with the proposed emergency change, a minor editorial error (i.e., misspelled word) would be corrected.

Safety Evaluation

The integrated SI test is intended to demonstrate the capability of the associated diesel generator to properly energize the safeguards bus and equipment in the event of a design basis accident (i.e., Loss-of-Coolant Accident with Loss of Offsite Power). Licensees have typically performed the integrated SI test by manually opening the normal offsite power source circuit breaker to the bus with the alternate source breaker and tie breakers racked-out. Coincident with this, an SI signal is manually simulated. These actions initiate undervoltage relays resulting in the integrated sequence described above. The undervoltage relays are time-delay voltage sensors set at 50% for loss of voltage (short delay), and 90% for degraded voltage (long delay). Step two of the sequence is necessary to preclude damage or tripping of the diesel generator set when it connects to the bus.

To automatically ensure that the bus is deenergized prior to the diesel generator being connected, the undervoltage relays are provided with slave relays (Clark Control Co. Series 4U) to open the power source breakers. Due to the fact that the source breakers are manually opened or racked-out for the integrated SI test, the source breaker automatic trip feature is not properly tested.

Although the source breaker trip feature has not been tested in the past as part of the integrated SI test, due to use of the test method described above, it has been tested in conjunction with other testing. Each refueling outage,

the licensee performs preventative maintenance on the circuit breakers of one of the two safeguards buses. As part of the operability restoration procedure following this maintenance, the source breaker trip function is tested to verify the proper operation of the breakers and associated trip logic instrumentation. This test provides sufficient overlap with the integrated SI test to completely accomplish the required surveillance, although not within the required interval of every refueling outage, since the breaker maintenance test is only performed on each bus every other outage.

To justify a one-time extension of the surveillance interval, the licensee has provided information which provides a very high degree of confidence that the source breakers would properly trip in event of a challenge. The above mentioned post maintenance restoration testing has demonstrated that the source breaker trip circuitry has a history of high reliability. Also, an analysis of Nuclear Plant Reliability Data System records indicates that the Clark 4U relay has a better than average failure rate history. Furthermore, it is noted that the redundant safeguards trains (buses 15 and 25) have been properly tested within the required interval. The staff has, therefore, concluded that it is highly probable, in the event of a design basis accident, that proper voltage restoration would occur.

To provide additional assurance that the Clark 4U relays are operable, the licensee has committed to visually inspect them monthly during the period an emergency amendment is in effect. Should either Unit 1 or Unit 2 be taken to cold shutdown for other reasons, the incomplete testing will be completed on the shutdown unit prior to resumption of operation.

Evaluation

The licensee has provided evidence that the undervoltage trip feature of the source breakers is highly reliable and that there is a high probability that the automatic bus voltage restoration feature would operate as designed in the event of a design basis accident. The monthly visual inspections of the relays will provide increased assurance that they are operable. Also, should either unit be placed in cold shutdown prior to the Fall outage, the missed portion of the integrated SI test will be performed.

Based on the above, the staff has determined that an emergency amendment should be granted.

3.0 EMERGENCY CIRCUMSTANCES

In accordance with 10 CFR 50.91(a)(5), the licensee has provided justification that it could not make timely application and that emergency circumstances do exist. As previously discussed in section 2.0 and as addressed in the licensee's Amendment Request, the licensee determined on July 27, 1992, that a portion of the surveillance testing described in the bases for section 4.6.A.3.b.1 had not been completed as a result of an assessment of an

operating experience at a similar facility, Kewanee LER No. 92-011, and Information Notice 90-040. Thus, the NRC staff does not believe that the licensee has abused the emergency provisions in this instance. Accordingly, the Commission has determined that there are emergency circumstances warranting prompt approval, by the Commission, of an amendment to the facility Technical Specifications.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of the facility, in accordance with the amendment, would not:

- (1) Involve a significant increase in the probability or consequences of any accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The amendments have been evaluated against the above criteria of 10 CFR 50.92.

Criterion 1

Assuming that incomplete surveillance testing results in inoperable voltage restoration logic, only 4160V buses 16 and 26 would be affected. The 4160V buses 15 and 25 are still within the required surveillance test interval and remain operable. Therefore, consistent with the plant accident analysis, at least one train of safeguards components would remain operable on each unit.

Buses 16 and 26 are energized and controls remain available and capable of responding to any plant transient. Based on the results of past testing, a high degree of confidence exists that all electrical functions are fully operable. Therefore, the amendments will not significantly affect the probability or consequences of an accident previously evaluated.

Criterion 2

There are no new failure modes or mechanisms associated with the requested amendments. The proposed changes do not involve any modification of plant equipment or changes in operational limits, it only requests the delay of a portion of the surveillance testing of the voltage restoration logic. Therefore, the proposed amendments do not create the possibility of a new or different kind of accident from any previously evaluated, and the accident analyses presented in the Updated Safety Analysis Report will remain bounding.

Criterion 3

Assuming that incomplete surveillance testing results in inoperable voltage restoration logic, only 4160V buses 16 and 26 would be affected. The 4160V buses 15 and 25 are still within the required surveillance test interval and remain operable. Therefore, consistent with the plant accident analysis, at least one train of safeguards components would remain operable on each unit. Therefore, the requested amendments will not result in any reduction in the plants' margin of safety.

On the basis that the proposed amendments meet the 10 CFR 50.92 criteria, the Commission has determined that the proposed amendments do not involve a significant hazards consideration.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Minnesota State Official was notified of the proposed issuance of the amendment. The State Official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and a change to the surveillance requirement. We have determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has determined that the proposed amendments involve no significant hazards consideration. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: August 11, 1992