Xcel Energy®

Monticello Nuclear Generating Plant
2807 W County Road 75
Monticello, MN 55362

May 8, 2012

L-MT-12-027
10 CFR 50.90

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

Monticello Nuclear Generating Plant
Docket 50-263
Renewed Facility Operating License No. DPR-22

License Amendment Request: Provide Restoration Period Before Declaring Average Power Range Monitors Inoperable When Surveillance Requirement 3.3.1.1.2 Not Met

In accordance with 10 CFR 50.90, the Northern States Power Company – Minnesota (NSPM), doing business as Xcel Energy, Inc., proposes to revise the Monticello Nuclear Generating Plant (MNGP) Technical Specification (TS) 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," requirements pertaining to the Average Power Range Monitors (APRMs). It is proposed to allow a time period for restoration when the absolute difference between the APRM channel power and calculated thermal power exceeds the limit of Surveillance Requirement 3.3.1.1.2 before declaring the channels inoperable.

NSPM requests U. S. Nuclear Regulatory Commission approval of the proposed license amendment request by April 1, 2013. NSPM requests a 90 day implementation period for this license amendment.

Enclosure 1 provides a description of the proposed changes and includes the technical evaluation and associated no significant hazards determination and environmental evaluations. Enclosure 2 provides a marked-up copy of the TS pages showing the proposed changes. Enclosure 3 provides a copy of the associated draft marked-up TS Bases pages, for information.

The MNGP Plant Operations Review Committee has reviewed this application. In accordance with 10 CFR 50.91, a copy of this application, with enclosures, is being provided to the designated Minnesota Official.

Summary of Commitments

This letter proposes no new commitments and does not revise any existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on May 8, 2012.

Timothy J. O'Connor
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power Company – Minnesota

Enclosures (3)

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC
Minnesota Department of Commerce

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PROVIDE RESTORATION PERIOD BEFORE DECLARING AVERAGE POWER RANGE MONITORS INOPERABLE WHEN SURVEILLANCE REQUIREMENT 3.3.1.1.2 NOT MET

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, the Northern States Power Company – Minnesota (NSPM), doing business as Xcel Energy, Inc., proposes to revise the Monticello Nuclear Generating Plant (MNGP) Technical Specification (TS) 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," requirements pertaining to the Average Power Range Monitors (APRMs). Specifically, a time period for restoration[1] is proposed when the absolute difference between APRM channels indicated power and calculated thermal power is greater than the 2% Rated Thermal Power (RTP) limit specified in Surveillance Requirement (SR) 3.3.1.1.2. This restoration period provides an opportunity to correct this condition before declaring the channels inoperable and commencing plant shutdown in accordance with the Required Actions if the absolute difference cannot be restored within an hour.

The U.S. Nuclear Regulatory Commission (NRC) has approved this provision for the boiling water reactor (BWR) plants discussed in the Precedents section of this license amendment request (LAR). Additionally, similar provisions exist within corresponding pressurized water reactor (PWR) specifications.

2.0 BACKGROUND

On June 30, 2011, during a control rod pattern adjustment at 80% power, three of the four APRMs exceeded the SR 3.3.1.1.2 requirement to maintain the absolute difference between APRM channels and calculated thermal power ≤ 2% RTP when operating at ≥ 25% RTP (LER 2011-005 – Reference 1). Two of the three APRMs were out of specification in the conservative direction.

3.0 DETAILED DESCRIPTION

It is proposed to add a note to Specification 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," for when the APRM functions listed below do not meet SR 3.3.1.1.2 and gain adjustments are necessary. The proposed note will state:

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1. A period of 2 hours is proposed for when the APRMs indicate power less than the calculated thermal power (non-conservative case) and 12 hours when the APRMs indicate power greater than the calculated thermal power (conservative case).

When Function 2.b and 2.c channels are inoperable due to APRM indication not within limits, entry into associated Conditions and Required Actions may be delayed for up to 2 hours if the APRM is indicating a lower power value than the calculated power, and for up to 12 hours if the APRM is indicating a higher power value than the calculated power.

This provision is applicable for the following average power range monitoring functions:

2.b APRM Flow Biased Simulated Thermal Power – Upscale
2.c APRM Fixed Neutron Flux – High

The TS Bases will be revised to describe the basis for this change.

The TS change (mark-ups) associated with this change are provided in Enclosure 2. The corresponding draft TS Bases (mark-ups) are provided in Enclosure 3, for information. The TS Bases changes will be issued in accordance with MNGP Specification 5.5.9, "Technical Specification (TS) Bases Control Program", following approval of this license amendment request.

4.0 APRM DESCRIPTION AND DESIGN / LICENSING FUNCTIONS SUMMARY

The APRMs provide the primary indication of neutron flux within the core and respond almost instantaneously to neutron flux increases. APRM channels receive input signals from local power range monitors (LPRMs) in the reactor core to provide an indication of the power distribution and local power changes. The APRM channels average these LPRM signals to provide a continuous indication of average reactor power from a few percent to greater than RTP. Each APRM channel also includes an Oscillation Power Range Monitor Upscale function which monitors small groups of LPRM signals to detect thermal-hydraulic instabilities. The APRM System is divided into four APRM channels that provide inputs to each of the four 2-out-of-4 voter channels which in-turn provide inputs to the RPS trip systems. Three of the four APRM channels, and all four of the voter channels, are required OPERABLE to ensure that no single failure preclude a scram on a valid signal.

The APRM Simulated Thermal Power (STP) – High (Function 2.b) monitors neutron flux to approximate the thermal power transferred to the reactor coolant. The APRM neutron flux is electronically filtered with a time constant, representative of fuel heat transfer dynamics to generate a signal proportional to thermal power in the reactor. Trip level is varied as a function of recirculation drive flow but is clamped at an upper limit lower than the APRM Neutron Flux – High (Function 2.c) allowable value. No specific safety analyses take credit for the APRM STP – High function. It does however, provide protection against slow thermal power increase transients (e.g., loss of feedwater

heating) and because of a lower trip setpoint initiates a scram before the high neutron flux scram.

For rapid neutron flux increase events, thermal power lags the neutron flux and the APRM Neutron Flux – High function will provide a scram signal before the APRM STP – High function is exceeded. The APRM Neutron Flux – High function is credited to terminate the main steam isolation valve closure event and, along with the safety/relief valves, limit peak reactor pressure vessel pressure to less than ASME Code limits. Also, this function is credited to terminate the control rod drop accident (CRDA). The APRM Simulated Thermal Power (STP) – High and the APRM Neutron Flux – High functions are required to be OPERABLE in MODE 1.

5.0 TECHNICAL ANALYSIS

To ensure the APRMs are accurately indicating the true core average power, they are calibrated to reflect reactor power. This surveillance (SR 3.3.1.1.2) is performed at a Frequency of once per 7 days, based on the potential minor changes in LPRM sensitivity, which could affect the APRM readings between performances of SR 3.3.1.1.6.[2] SR 3.3.1.1.2 states:

> Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is ≤ 2% RTP while operating at ≥ 25% RTP.

Currently, if this absolute difference is exceeded, the applicable APRM functions[3] are declared inoperable and Specification 3.3.1.1, Required Action Condition C.1 entered, which requires RPS trip capability to be restored within one hour. If trip capability cannot be restored (meet SR 3.3.1.1.2) within the hour, plant shutdown must commence. Condition F requires with RPS trip capability not restored, the plant be in MODE 2 within 6 hours and MODE 3 in 12 hours pursuant to Condition G.

There are two cases for this situation where SR 3.3.1.1.2 is not met. A non-conservative case (APRMs indicate less than the calculated thermal power), and a conservative case (APRMs indicate greater than calculated thermal power). NSPM has identified several BWR licensees[4] whose TS provide an allowance to address both situations. Also, for corresponding PWR specifications, if the calorimetric heat balance exceeds the power range channel output by more than 2% RTP, the channel(s) are not

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2. SR 3.3.1.1.6 is the calibration of the local power range monitors (LPRMs).
3. The applicable APRM functions are Function 2.b, APRM Flow Biased Simulated Thermal Power – Upscale and Function 2.c, APRM Fixed Neutron Flux – High.
4. Several licensees, La Salle, Dresden, and Quad Cities have similar notes in their RPS TS which provide this delay time for restoration.

immediately declared inoperable but are adjusted. Only if the output cannot be properly adjusted is the channel declared inoperable.

The current TS require plant shutdown, if RPS trip capability cannot be restored within the hour, the immediacy of which is not warranted. For the non-conservative case where the APRMs indicate a power less than the calculated thermal power, a short time frame should be provided to correct the condition. The identified BWR licensees have a 2 hour period specified in their TS to restore to within the value specified in SR 3.3.1.1.2, before requiring entry into the Required Actions.

For the conservative case where the APRMs indicate a power greater than the calculated thermal power, a prompt plant shutdown is unwarranted, and a greater time period in which to correct the condition is appropriate. The TS for the BWR licensees discussed above include a 12 hour period in which to restore to within the value specified in SR 3.3.1.1.2, before entry into the associated Required Actions.

5.1 Discussion of the Proposed TS Change

It is proposed to add a note to modify the requirements for a specified time period, for the affected RPS instrumentation functions; the APRM Flow Biased Simulated Thermal Power - Upscale (Function 2.b) and APRM Fixed Neutron Flux-High (Function 2.c), when the absolute difference between the APRM channels and calculated thermal power is not within the limit of SR 3.3.1.1.2 and gain adjustments are necessary.

This note would allow entry into the associated Conditions and Required Actions to be delayed for up to 2 hours if the APRM is indicating a lower power value than the calculated thermal power (non-conservative), and for up to 12 hours if the APRM is indicating a higher power value than the calculated thermal power (conservative). Upon completion of the gain adjustment, or expiration of the time allotted by the note, the absolute difference between the channel and calculated thermal power would be required to be restored to within the limits of SR 3.3.1.1.2 (≤ 2% RTP) or the applicable Condition entered and Required Actions taken. This note is based on the time required to perform gain adjustments on multiple channels and the impact on safety; additional time is allowed when the absolute difference between the APRM channels and calculated thermal power is out of limits but conservative

The most important concern is the situation where the APRMs indicate a power below the calculated thermal power. This is the non-conservative case. A difference of 2% is analyzed or assumed as part of the safety analysis. If the APRMs do not meet SR 3.3.1.1.2, prompt action should be taken to restore compliance.

A 2 hour time period has been determined by other BWR licensees (and approved by the NRC – see Reference 2) to be a reasonable time frame in which to restore for the non-conservative case prior to declaring the APRM channels inoperable. This duration is based on both the time period necessary to accomplish multiple channel gain adjustments and the impact on safety. This is a sensible time in which to restore within limits, and is acceptable based on the low probability of a transient or Design Basis Accident (DBA) occurring simultaneously. Further discussion of the rationale for the 2 hour Completion Time is provided in the following sections.

Requiring a prompt plant shutdown, in accordance with Conditions F and G, is overly conservative for the case where the APRMs indicate the power to be greater than the calculated thermal power. In this situation the APRM trip setpoints are conservative. However, indicated power is reading higher than real power and actions should be promptly taken to restore the absolute difference to within the limits of SR 3.3.1.1.2 of less than or equal to 2% RTP. Since high reading APRM channel(s) are not a safety concern (the trip will originate sooner than required by the safety analysis), a reasonable time period should be allowed for restoration. A period of 12 hours has been determined by the other BWR licensees (and approved by the NRC) as a reasonable time period for restoration for the conservative case prior to declaring the channels inoperable.

5.2 Safety Analysis Evaluation Relative to Measurement Uncertainties

Regulatory Guide 1.49 (Reference 3) establishes the requirement that the safety analysis be performed for an initial power level of at least 102% of rated. Safety analyses are performed for the limiting power level up to 102%.[5] The safety analysis process includes the power uncertainty either in the development of model inputs or in establishing the event limits.

For some analyses, an initial power level of 102% and other power dependent parameters are directly used in the analysis of some events (e.g., overpressure protection and LOCAs). In other analyses, the uncertainty in initial power level may also be combined with other uncertainties to adjust analysis results. In addition, power uncertainties are covered as part of the calibration error in the APRM setpoint. Effectively, the 2% measurement uncertainty in SR 3.3.1.1.2 is double counted in the safety analysis and setpoint processes resulting in additional conservatism for the APRM setpoints.[6]

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5. Some events because of their very low probability of occurrence, (e.g., anticipated transients without scram (ATWS) and station blackout) are performed at the licensed power level.
6. BWR Owners Group report NEDC-32973P, "Safety Analysis Evaluations Relative to Measurement Uncertainties for the BWR/4 Improved Standard Technical Specifications," discusses uncertainties for various parameters.

The current accident analyses for the MNGP were performed at an assumed power level of 1880 MWt (increased by 2% to 1918 MWt to account for power measurement uncertainties) in accordance with 10 CFR 50 Appendix K, "ECCS Evaluation Models."

5.3 La Salle Clarification to Specification 3/4.3.1, Reactor Protection System Instrumentation in the Unit 1 and 2 Technical Specifications

Commonwealth Edison Company on August 28, 1985 (Reference 4), submitted a license amendment request for La Salle Units 1 and 2, to clarify a footnote in Table 4.3.1.1-1, "Reactor Protection System Instrumentation Surveillance Requirements,"[7] pertaining to the weekly performance of APRM calibrations. Footnote (d) specified that during APRM calibrations, the absolute difference between the APRMs and real calculated thermal power should not be greater than 2% during Operational Condition 1 when thermal power was greater than or equal to 25% RTP. Similar to Monticello, a situation occurred where two APRM exceeded the 2% RTP limit, and with two APRMs inoperable, if they could not be adjusted within the hour, a half-scram was required. This interpretation was considered by Commonwealth Edison to be conservative and not the intent of the specification and they submitted a LAR to address the situation.

Footnote (d) indicated that the calibration consisted of an adjustment of the APRM channel to conform to the heat balance power determination (when above 25% RTP) when the absolute difference between the two was greater than 2% RTP. No time limit was proposed for making this adjustment. A change was suggested to clarify the intent of the specification by modifying the footnote to provide reasonable time periods to allow APRM gain adjustment calibrations to be attempted before declaring the channels inoperable, if the 2% RTP limit was exceeded.[8] Amendments to incorporate this clarification were approved by the NRC as Amendment Nos. 30 and 17 for the La Salle Units in November 1985 (Reference 2).

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7. The La Salle Units 1 and 2 TS were in the original STS format at the time. Specification 3/4.3.1, "Reactor Protection System Instrumentation," included Table 4.3. 1.1-1. Footnote (d) corresponds to SR 3.3.1.1.2 in the present ITS format.
8. Some BWR plants TS include Specification 3/4.2.2, "APRM Setpoints," as one of the power distribution limit specifications. It provides a 2 hour period for restoration before a power reduction to 25% RTP is required. This may have been part of the basis for the 2 hour limit for the non-conservative case.

5.4 Comparable PWR Specifications

Both the Westinghouse and Babcock and Wilcox (B&W) improved STS (NUREG-1431 (Reference 5) and NUREG-1430 (Reference 6), respectively) provide the type of allowance being pursued herein. SR 3.3.1.2 in both these PWR improved STS NUREGs require comparison of the results of calorimetric heat balance calculation to power range channel output every 24 hours when reactor power is greater than 15% RTP.

Westinghouse – Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculations results exceed power range channel output by more than + 2% RTP.

B&W – Compare result of calorimetric heat balance calculation to power range channel output.

Note 1 is applied to this B&W surveillance which states:

Adjust power range channel output if the absolute difference is > 2% RTP.

Thus while the presentation of the TS requirements are a little different, the same intention is clear.

The outputs of the power range channels are normalized to the calorimetric. The TS Bases for this surveillance for the Westinghouse and B&W improved STS state:

Westinghouse – If the calorimetric heat balance calculation results exceed the power range channel output by more than 2% RTP, the power range channel is not declared inoperable, but must be adjusted. [emphasis added] The power range channel output shall be adjusted consistent with the calorimetric heat balance calculation results if the calorimetric calculation exceeds the power range channel output by more than + 2% RTP. If the power range channel output cannot be properly adjusted, the channel is declared inoperable.

B&W – ... if the absolute difference between the calorimetric and the Nuclear Instrumentation System (NIS) channel output is > 2% RTP, the NIS is not declared inoperable but must be adjusted. [emphasis added] If the NIS channel cannot be properly adjusted, the channel is declared inoperable.

The TS Bases indicate that the value of 2% is adequate because this value is assumed within the Chapter 14 safety analyses. These checks and, if necessary, adjustment of the power range channels ensure that channel accuracy is maintained within the analyzed error margins.

5.5 Comparable MNGP Specifications Providing a Two Hour Completion Time

A Completion Time of 2 hours is provided in many specifications in the TS before an interim action (if applicable) is taken, and a power reduction to ≤ 25% RTP is required.

- Required Action A.1 in each Power Distribution (thermal) Limits specification provides a 2-hour Completion Time to restore the applicable thermal limit to within limits.
  - Specification 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)."
  - Specification 3.2.2, "Minimum Critical Power Ratio (MCPR)."
  - Specification 3.2.3, "Linear Heat Generation Rate (LHGR)."

- Similarly, a Completion Time of 2 hours is provided in the following specifications for restoration of parameters / subsystems / channels to within limits.

Specification	Title	Req'd Action
3.3.2.2	Feedwater Pump and Main Turbine High Water Level Trip Instrumentation	B.1
3.6.2.2	Suppression Pool Water Level	A.1
3.7.7	Main Turbine Bypass System	A.1
3.8.1	AC Sources – Operating System (Emergency Diesel Generator)	E.1
3.8.6	Battery Parameters	E.1
3.8.7	Distribution Systems – Operating (DC electrical power distribution subsystem)	B.1

Note these same Completion Times are also specified in the BWR-4 and BWR-6 improved STS, and corresponding specifications within the various PWR vendor improved STS NUREGs. These Completion Times also are stated in those specifications common to both BWRs and PWRs. As discussed above, a 2 hour Completion Time has been determined for the Power Distribution Limits, and other important equipment, to provide a reasonable time frame in which to restore a parameter / equipment to within limits based on the low probability of a transient or DBA occurring simultaneously with when the parameter / equipment is inoperable (out of specification).

5.6 Discussion of Twelve Hour Completion Time

Requiring a prompt plant shutdown, in accordance with the current Required Actions, is overly conservative for the case where the APRMs indicate the power to be greater than the calculated thermal power. In this situation the APRM trip setpoints are conservative. A Completion Time of 8 to 12 hours is provided in many Required Actions within the TS for when there is a loss in redundancy for a system, structure or component (SSC). For these situations the requirement to meet the single failure criteria is temporarily suspended for the duration of the Completion Time associated with the Required Action. However, in the conservative case (i.e., APRMs indicate the power to be greater than the calculated thermal power), there is no loss of function, the trip associated with the APRMs will originate sooner then required by the accident analysis. Considering the impact on safety, a period of 12 hours has been previously determined by other BWR licensees (and approved by the NRC) as a reasonable time period for restoration for the conservative case prior to declaring the channels inoperable.

5.7 Conclusion

Adding a note to allow entry into the associated Conditions and Required Actions to be delayed for up to 2 hours if the APRM is indicating a lower power value than the calculated thermal power (non-conservative), and for up to 12 hours if the APRM is indicating a higher power value than the calculated thermal power (conservative), is acceptable for the reasons discussed herein.

6.0 REGULATORY ANALYSIS

6.1 No Significant Hazards Determination

In accordance with the requirements of 10 CFR 50.90, the Northern States Power Company – Minnesota (NSPM) requests an amendment to facility Renewed Operating License DPR-22, to revise the Monticello Nuclear Generating Plant (MNGP) Technical Specification (TS) 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," requirements pertaining to the Average Power Range Monitors (APRMs). Specifically, it is proposed to add a time period for restoration when the absolute difference between the APRM channels and the calculated thermal power exceeds the limit before declaring the channels inoperable.

The NSPM has evaluated the proposed change to the TS in accordance with 10 CFR 50.91 against the standards in 10 CFR 50.92 and has determined that the operation of the MNGP in accordance with the proposed amendment presents no significant hazards. NSPM's evaluation against each of the criteria in 10 CFR 50.92 follows.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change provides time for restoration when the APRMs do not meet the limit of SR 3.3.1.1.2. The APRM system is not an initiator of or a precursor to any accident or transient. Plant design is not being modified by the proposed change. The capability of the APRMs to perform their required functions under these circumstances is not degraded since the safety analyses include the power uncertainty.

As a result, the probability of any accident previously evaluated is not significantly increased. The consequences of any accident previously evaluated during the requested Completion Time are no different that that accident during the current Completion Time. As a result, the probability or consequences of an accident previously evaluated are not significantly increased.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change to the TS requirements for the APRM system do not introduce any new accident precursors and do not involve any physical plant alterations or changes in the methods governing normal plant operation that could initiate a new or different kind of accident. The changes do not alter assumptions made in the safety analysis and are consistent with the safety analysis assumptions. The proposed amendment does not alter the intended function of the APRM system and does not adversely affect the ability of the system to provide core protection.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

This change does not involve a significant reduction in a margin of safety since the extended time is small and allows for operator consideration of plant conditions, personnel availability, and appropriate response.

Margin of safety is related to confidence in the ability of the fission product barriers (fuel cladding, reactor coolant system, and primary containment) to perform their design functions during and following postulated accidents. The proposed amendment does not alter setpoints or limits established or assumed by the accident analyses. The TSs will continue to require operability of these APRM functions to provide core protection for postulated reactivity insertion events occurring during power operating conditions, consistent with the plant safety analyses. This change is consistent with plant design and does not change the actual TS operability requirements; thus, previously evaluated accidents are not affected by this proposed change.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, the NSPM has determined that operation of the facility in accordance with the proposed change does not involve a significant hazards consideration as defined in 10 CFR 50.92(c), in that it does not: (1) involve a significant increase in the probability or consequences of an 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.

6.2 Applicable Regulatory Requirements

10 CFR 50.36, "Technical specifications," provides the regulatory requirements for the content required in the TSs. As stated in 10 CFR 50.36, the TSs will include Surveillance Requirements (SRs) to assure that the limiting conditions for operation (LCO) (and associated remedial actions) are met.

The MNGP was designed largely before the publishing of the 70 General Design Criteria (GDC) for Nuclear Power Plant Construction Permits proposed by the Atomic Energy Commission for public comment in July 1967, and constructed prior to the 1971 publication of Appendix A, "General Design Criteria for Nuclear Power Plants", to 10 CFR Part 50. As such, the MNGP was not licensed to the Appendix A, General Design Criteria (GDC).

The MNGP USAR, Section 1.2, lists the principal design criteria (PDCs) for the design, construction and operation of the plant. USAR Appendix E provides a plant comparative evaluation with the proposed AEC 70 design criteria. It was concluded that the plant conforms to the intent of the GDCs. Therefore, the applicable GDCs are discussed below.

Criterion 13 -- Instrumentation and control. Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges.

Criterion 20 -- Protection system functions. The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

Criterion 21 -- Protection system reliability and testability. The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

Criterion 22 -- Protection system independence. The protection system shall be designed to assure that the effects of natural phenomena, and of normal operating, maintenance, testing, and postulated accident conditions on redundant channels do not result in loss of the protection function, or shall be demonstrated to be acceptable on some other defined basis. Design techniques, such as functional diversity or diversity in component design and principles of operation, shall be used to the extent practical to prevent loss of the protection function.

Criterion 29 -- Protection against anticipated operational occurrences. The protection and reactivity control systems shall be designed to assure an extremely high probability of accomplishing their safety functions in the event of anticipated operational occurrences.

NSPM has evaluated the proposed changes against the applicable regulatory requirements and acceptance criteria. The technical analysis in Section 5.0 concludes that adding a time period for restoration when the absolute difference between the APRM channels and the calculated (heat balance) exceeds the limit before declaring the channels inoperable, is reasonable and continues to assure that the design requirements and acceptance criteria of RPS is met. Based on this, there is reasonable assurance that the health and safety of the public, following approval of this change, is unaffected.

7.0 ENVIRONMENTAL EVALUATION

The NSPM has determined that the proposed change would not revise a requirement with respect to installation or use of a facility or component located within the restricted area, as defined in 10 CFR 20, nor would it change an inspection or surveillance requirement. The proposed amendment does not involve (i) a significant hazards consideration, or (ii) authorize a significant

change in the types or a significant increase in the amounts of any effluent that may be released offsite, or (iii) result in a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for a categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, NSPM concludes that pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

8.0 PRECEDENT

The NRC has granted this provision for the following Exelon units and is included in the ITS for the following stations:

- La Salle County Station; Units 1 and 2 (References 2 and 7)
- Dresden Nuclear Power Station; Units 2 and 3 (Reference 8)
- Quad Cities Nuclear Power Station; Units 1 and 2 (Reference 9)

9.0 REFERENCES

1. MNGP LER 2011-005, "Power Range Monitor Channels Out of Alignment," dated August 26, 2011.

2. Letter from U.S. NRC to Commonwealth Edison Company (D. Farrar), "Issuance of Amendment No. 30 to Facility Operating License No. NPF-11 and Amendment No. 17 to Facility Operating License NPF-18 – La Salle County Station, Units 1 and 2," dated November 20, 1985.

3. U. S. NRC Regulatory Guide 1.49, "Power Levels of Nuclear Power Plants."

4. Letter from Commonwealth Edison Company to U.S. NRC, "LaSalle County Station Units 1 and 2, Proposed Amendments to Technical Specification for Facility Operating License NPF-11 and NPF-18, APRM Calibration Gain Adjustment Factors, Docket Nos. 50-373 and 50-314," dated August 28, 1985.

5. U. S. NRC NUREG-1431, Volumes 1 and 2, Revision 3.0, Standard Technical Specifications Westinghouse Plants, Published June 2004.

6. U. S. NRC NUREG-1430, Volumes 1 and 2, Revision 3.0, Standard Technical Specifications Babcock and Wilcox Plants, Published June 2004.

7. Letter from U.S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "LaSalle County Station, Units I and 2 – Issuance of Amendments (TAC Nos. MB2253 and MB2254)," dated December 13, 2001. (ADAMS Accession Number ML013170087)

8. Dresden Nuclear Power Station; Units 2 and 3, Improved Standard Technical Specifications

9. Quad Cities Nuclear Power Station; Units 1 and 2, Improved Standard Technical Specifications

ENCLOSURE 2

MONTICELLO NUCLEAR GENERATING PLANT

LICENSE AMENDMENT REQUEST

PROVIDE RESTORATION PERIOD BEFORE DECLARING AVERAGE POWER RANGE MONITORS INOPERABLE WHEN SURVEILLANCE REQUIREMENT 3.3.1.1.2 NOT MET

MARKED-UP TECHNICAL SPECIFICATION PAGES

(2 pages follow)

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

----------NOTE----------
1. Separate Condition entry is allowed for each channel.

Insert A

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip. OR A.2 ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d or 2.f. --- Place associated trip system in trip.	12 hours 12 hours
B. ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d or 2.f. --- One or more Functions with one or more required channels inoperable in both trip systems.	B.1 Place channel in one trip system in trip. OR B.2 Place one trip system in trip.	6 hours 6 hours
C. One or more Functions with RPS trip capability not maintained.	C.1 Restore RPS trip capability.	1 hour

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Enclosure 2

Insert A

2. When the Function 2.b and 2.c channels are not within the limit of SR 3.3.1.1.2 due to APRM indication not within limits, entry into associated Conditions and Required Actions may be delayed for up to 2 hours if the APRM is indicating a lower power value than the calculated power, and for up to 12 hours if the APRM is indicating a higher power value than the calculated power.

ENCLOSURE 3

MONTICELLO NUCLEAR GENERATING PLANT

LICENSE AMENDMENT REQUEST

PROVIDE RESTORATION PERIOD BEFORE DECLARING AVERAGE POWER RANGE MONITORS INOPERABLE WHEN SURVEILLANCE REQUIREMENT 3.3.1.1.2 NOT MET

DRAFT TECHNICAL SPECIFICATION BASES PAGES

(FOR INFORMATION)

(2 pages follow)

BASES

ACTIONS

A Note has been provided to modify the ACTIONS related to RPS instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable RPS instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable RPS instrumentation channel.

Insert B →

A.1 and A.2

Because of the diversity of sensors available to provide trip signals and the redundancy of the RPS design, an allowable out of service time of 12 hours has been shown to be acceptable (Ref. 16) to permit restoration of any inoperable channel to OPERABLE status. However, this out of service time is only acceptable provided the associated Function's inoperable channel is in one trip system and the Function still maintains RPS trip capability (refer to Required Actions B.1, B.2 and C.1 Bases). If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel or the associated trip system must be placed in the tripped condition per Required Actions A.1 and A.2. Placing the inoperable channel in trip (or the associated trip system in trip) would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue. Alternatively, if it is not desired to place the channel (or trip system) in trip (e.g., as in the case where placing the inoperable channel in trip would result in a full scram), Condition D must be entered and its Required Action taken. The 12 hour allowance is not allowed for Reactor Mode Switch – Shutdown Position Function and Manual Scram Function channels since with one channel inoperable RPS trip capability is not maintained. In this case, Condition C must be entered and its Required Actions taken.

As noted, Action A.2 is not applicable for APRM Functions 2.a, 2.b, 2.c, 2.d or 2.f. Inoperability of one required APRM channel affects both trip systems. For that condition, Required Action A.1 must be satisfied, and is the only action (other than restoring operability) that will restore capability to accommodate a single failure. Inoperability of more than one required APRM channel of the same trip function results in loss of trip capability and entry into Condition C, as well as entry into Condition A for each channel.

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Enclosure 3

Insert B

Note 2 has been provided to modify the ACTIONS for the RPS instrumentation functions of APRM Flow Biased Simulated Thermal Power – Upscale (Function 2.b) and APRM Fixed Neutron Flux – High (Function 2.c) when they are not within the limit of SR 3.3.1.1.2. Note 2 allows entry into associated Conditions and Required Actions to be delayed up to 2 hours if the APRM is indicating a lower power value than the calculated power (non-conservative), and for up to 12 hours if the APRM is indicating a higher power value than the calculated power (conservative).

Upon completion of the APRM adjustment to restore to within the limit of SR 3.3.1.1.2, or expiration of the time allotted by the note, the absolute difference between the channel and calculated power is required to be restored to within the limit of SR 3.3.1.1.2 (≤ 2% RTP) or the applicable Condition entered and Required Actions taken. This note is based on the time required to perform APRM adjustments on multiple channels and the impact on safety; additional time is allowed when the APRM is indicating a higher power value than the calculated power, i.e., out of limits but conservative.