P.O. Box 63
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Constellation Generation Group

Nine Mile Point
Nuclear Station

July 12, 2002
NMP1L 1677

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63
TAC No. MB5453

Subject: ***Application for Amendment to Technical Specifications Relating to Use of the Rod Worth Minimizer***

Gentlemen:

Nine Mile Point Nuclear Station, LLC, (NMPNS) hereby transmits an Application for Amendment to the Nine Mile Point Unit 1 (NMP1) Technical Specifications (TSs) as set forth in Appendix A of Operating License DPR-63. Attachment A provides the retyped TS page with marginal bars to show areas of proposed changes. Supporting information and analyses demonstrating that the proposed changes involve no significant hazards considerations pursuant to 10 CFR 50.92 are included as Attachment B. Attachment C provides a "marked-up" copy of the current TS and Bases pages for information only. NMPNS's determination that the proposed changes meet the criteria for categorical exclusion from performing an environmental assessment is based on the evaluation included as Attachment D.

The proposed changes to the TSs contained herein revise Sections 3.1.1 and 4.1.1, "Control Rod System," by reducing the power level below which the rod worth minimizer or a second independent verification of rod positions must be used from 20% rated thermal power (RTP) to 10% RTP. Analysis has shown that no significant control rod drop accident can occur above 10% RTP. The low power setpoint change will reduce the time necessary for both reactor startup and shutdown.

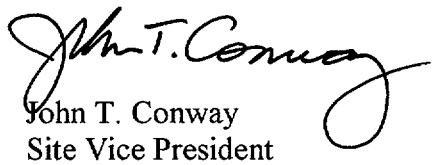
NRC approval of the proposed amendment is necessary prior to the NMP1 Spring 2003 refueling outage (RFO17). Therefore, NMPNS requests that this TS amendment application be approved and the amendment issued no later than January 15, 2003, with the implementation date specified as prior to the start of RFO17.

A001

Pursuant to 10 CFR 50.91(b)(1), NMPNS has provided a copy of this amendment application and the associated analyses regarding no significant hazard considerations to the appropriate state representative.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 12, 2002.

Very truly yours,



John T. Conway
Site Vice President

JTC/JJD/jm
Attachments

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector
Mr. P. S. Tam, Senior Project Manager, NRR (2 copies)
Mr. John P. Spath
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Albany, NY 12203-6399
Records Management

ATTACHMENT A

NINE MILE POINT NUCLEAR STATION, LLC

LICENSE NO. DPR-63

DOCKET NO. 50-220

Proposed Changes to the Current Technical Specifications (TSs)

Replace existing TS page listed below with the attached revised page. The retyped page has marginal markings (revision bars) to indicate changes to the text.

Note: Due to a change in word processing software, the format of the revised page has been modified slightly from the currently approved page. The modifications do not affect the content of the page.

Remove	Insert
32	32

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENTS
(b) Whenever the reactor is in the startup or run mode below 10% rated thermal power, no control rods shall be moved unless the rod worth minimizer is operable, except as noted in 4.1.1.b (3)(a)(iv), or a second independent operator or engineer verifies that the operator at the reactor console is following the control rod program. The second operator may be used as a substitute for an inoperable rod worth minimizer during a startup only if the rod worth minimizer fails after withdrawal of at least twelve control rods. If the rod worth minimizer fails prior to the complete withdrawal of the first twelve rods, then the withdrawn rods shall be inserted in the reverse order in which they were withdrawn. A second independent operator or engineer shall verify that the operator at the reactor controls is following the control rod program in reverse order.	(b) If the rod worth minimizer is inoperable while the reactor is in the startup or run mode below 10% rated thermal power and a second independent operator or engineer is being used he shall verify that all rod positions are correct prior to commencing withdrawal of each rod group.
(4) Control rods shall not be withdrawn for approach to criticality unless at least three source range channels have an observed count rate equal to or greater than three counts per second.	

ATTACHMENT B

NINE MILE POINT NUCLEAR STATION, LLC

LICENSE NO. DPR-63

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Supporting Information and No Significant Hazards Consideration Analysis

Background

The rod worth minimizer (RWM) is a computer controlled system designed to monitor and block, when necessary, operator control rod selection, withdrawal and insertion actions, and thus assist in preventing significant control rod pattern errors which could lead to a control rod with a high reactivity worth. A significant pattern error is one of several abnormal events, all of which must occur to have a control rod drop accident (CRDA) which might exceed fuel energy density limit criteria for the event. The RWM is used only during low power operation when a CRDA might be of significance. During low power operation, the RWM provides rod blocks upon detection of a significant pattern error. It does not prevent a CRDA. Because a significant CRDA can only occur at low power, an adjustable setpoint is provided to automatically remove the RWM constraints above a setpoint (currently 20% rated thermal power (RTP)).

A keylock switch in the control room permits the RWM to be bypassed in the event of equipment failure. When the RWM is bypassed at low power, a second independent verification of rod positions prior to commencing withdrawal is required by the Technical Specifications (TSs).

Use of the RWM or a second independent verification of rod positions was included in the initial TSs for Nine Mile Point Unit 1 (NMP1) issued on August 22, 1969. At that time the low power setpoint for the RWM was 10% RTP. Subsequently, this setpoint was raised to the current 20% RTP as part of the TS changes needed for reload 6 (TS Amendment 16, dated June 27, 1977).

The 20% power limit for use of the RWM (or independent verification of rod positions) was instituted due to uncertainties in the calculational methods used to model the CRDA. Improved analysis has shown that no significant CRDA can occur above 10% RTP and therefore, the 20% power limit may be reduced.

Description of Change

The proposed changes to the TSs revise Sections 3.1.1 and 4.1.1, "Control Rod System," by reducing the power level below which the RWM or a second independent verification of rod positions must be used.

Specifically, TS Section 3.1.1.b(3)(b) will be revised to require use of the RWM below 10% rated thermal power whenever the reactor is in the startup or run modes, instead of the current 20% power limit.

Additionally, TS Section 4.1.1.b(3)(b) will be revised to require use of a second independent operator or engineer to verify correct rod positions prior to commencing withdrawal of each rod group when the RWM is inoperable while the reactor is in the startup or run modes below 10 % RTP, instead of the current 20% power limit.

Evaluation

NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel," Revision 8, Amendment 17, was submitted for NRC review by the BWR Owners Group on August 15, 1986. The purpose of Amendment 17 was to (1) eliminate the requirement for use of the rod sequence control system (RSCS) for those reactors having such a system, and (2) reduce the low power setpoint of the RWM. NMP1 does not have an RSCS.

Amendment 17 provided justification for a reduction in the RWM low power setpoint from 20% RTP to 10% RTP based on improvements in CRDA calculational methodology. Analyses described in the submittal for Amendment 17 show that at 10% RTP and greater, no control rod pattern can generate rod worths such that the fuel enthalpy would exceed the 280 cal/gram fuel enthalpy limit during the worst CRDA. By letter dated December 27, 1987, the NRC issued a safety evaluation accepting Amendment 17 to the topical report for referencing by licensees in individual license amendment applications.

Nine Mile Point Nuclear Station, LLC (NMPNS) has confirmed that NEDE-24011-P-A, Revision 8, Amendment 17, and the staff's associated safety evaluation, are applicable to NMP1. As discussed in the Staff's safety evaluation, NMPNS also confirms that TS Section 3.1.1.b(3)(b) currently contains a requirement for use of the RWM to an extent which would minimize substitution of a second operator or engineer to verify correct rod positions.

No Significant Hazards Consideration Analysis

The proposed changes to the Technical Specifications (TSs) contained herein revise Sections 3.1.1 and 4.1.1, "Control Rod System," by reducing the power level below which the rod worth minimizer (RWM) or a second independent verification of rod positions must be used from 20% rated thermal power (RTP) to 10% RTP. Analysis has shown that no significant control rod drop accident (CRDA) can occur above 10% RTP. The low power setpoint change will reduce the time necessary for both reactor startup and shutdown.

10 CFR 50.91 requires that at the time a licensee requests an amendment, it must provide to the Commission its analysis, using the standards in 10 CFR 50.92, concerning the issue of no significant hazards consideration. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would 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.

NMPNS has evaluated this proposed amendment pursuant to 10 CFR 50.91 and has determined that it involves no significant hazards consideration.

The following analysis has been performed:

The operation of Nine Mile Point Unit 1, in accordance with the proposed amendment, will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The TS revision lowers the power level at which the analyzed rod position sequence must be followed by use of the RWM or a second independent verification of rod positions. The RWM enforces the analyzed rod position sequence to ensure that the initial conditions of the CRDA analysis are not violated. Compliance with the analyzed rod position sequence and operability of the RWM is required in the startup and run modes when thermal power is less than 10% RTP. When thermal power is 10% RTP or greater, there is no possible control rod configuration that results in a control rod worth that could exceed the 280 cal/gram fuel design limit during a CRDA. None of the accidents previously evaluated assume the RWM is an initiator of the accident and therefore, the probability of an accident is not significantly increased by the change. Because the fuel design limit is not exceeded, the change to the low power setpoint will not significantly increase the consequences of an accident previously evaluated.

The operation of Nine Mile Point Unit 1, in accordance with the proposed amendment, will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The TS revision lowers the power level below which the analyzed rod position sequence must be followed. The change does not introduce a new mode of plant operation and does not involve a physical modification to the plant. Therefore, a new or different type of accident from any accident previously evaluated is not created.

The operation of Nine Mile Point Unit 1, in accordance with the proposed amendment, will not involve a significant reduction in a margin of safety.

The RWM enforces the analyzed rod position sequence to ensure that the initial conditions of the CRDA analysis are not violated. Compliance with the analyzed rod position sequence and operability of the RWM are required in the startup and run modes when thermal power is less than 10% RTP. When thermal power is 10% RTP and greater, there is no possible control rod configuration that results in a control rod worth that could exceed the 280 cal/gram fuel design limit during a CRDA. Because the fuel design limit is not exceeded at 10% RTP and greater, the change to the RWM low power setpoint does not significantly reduce the margin of safety.

ATTACHMENT C

NINE MILE POINT NUCLEAR STATION, LLC

LICENSE NO. DPR-63

DOCKET NO. 50-220

"Marked-Up" Copy of the Current Technical Specifications (TS) and Bases

The current versions of TS page 32 and Bases pages 39, 41, and 43 have been marked-up by hand to reflect the proposed changes.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENTS
(b) Whenever the reactor is in the startup or run mode below 10% rated thermal power, no control rods shall be moved unless the rod worth minimizer is operable, except as noted in 4.1.1.b (3)(a)(iv), or a second independent operator or engineer verifies that the operator at the reactor console is following the control rod program. The second operator may be used as a substitute for an inoperable rod worth minimizer during a startup only if the rod worth minimizer fails after withdrawal of at least twelve control rods. If the rod worth minimizer fails prior to the complete withdrawal of the first twelve rods, then the withdrawn rods shall be inserted in the reverse order in which they were withdrawn. A second independent operator or engineer shall verify that the operator at the reactor controls is following the control rod program in reverse order.	(b) If the rod worth minimizer is inoperable while the reactor is in the startup or run mode below 10% rated thermal power and a second independent operator or engineer is being used he shall verify that all rod positions are correct prior to commencing withdrawal of each rod group.
(4) Control rods shall not be withdrawn for approach to criticality unless at least three source range channels have an observed count rate equal to or greater than three counts per second.	

(2) The rod housing support is provided to prevent control rod ejection accidents. Its design is discussed in Section VII-E*. Procedural control shall assure that the housing supports are in place for all control rods.

(3) Control rod withdrawal and insertion sequences are established to assure that the maximum in-sequence individual control rod or control rod segments which are withdrawn could not be worth enough to cause the core to be more than 0.013 Δk supercritical if they were to drop out of the core in the manner defined for the Rod Drop Accident.[3] These sequences are developed prior to initial operation of the unit following any refueling outage and the requirement that an operator follow the sequences is backed up by the operation of the RWM. This 0.013 Δk limit, together with the integral rod velocity limiters and the action of the control rod drive system, limits potential reactivity insertion such that the results of a control rod drop accident will not exceed a maximum fuel energy content of 280 cal/gm. The peak fuel enthalpy content of 280 cal/gm is below the energy content at which rapid fuel dispersal and primary system damage have been found to occur based on experimental data as is discussed in reference 1.

~~Recent~~ Improvements in analytical capability have allowed more refined analysis of the control rod drop accident. ~~These techniques have been described in a topical report, two supplements and letters to the AEC.~~ [1][2][3][4][5] By using the analytical models described in these ~~reports~~ References coupled with conservative or worst-case input parameters, it has been determined that for power levels less than 10% of rated power, the specified limit on in-sequence control rod or control rod segment worths will limit the peak fuel enthalpy content to less than 280 cal/gm. Above 10% power, even multiple operator errors cannot result in a peak fuel enthalpy content of 280 cal/gm should a postulated control rod drop accident occur.

The following conservative or worst-case bounding assumptions have been made in the analysis used to determine the specified 0.013 Δk limit on in-sequence control rod or control rod segment worths. The allowable boundary conditions used in the analysis are quantified in references (4) and (5). Each core reload will be analyzed to show conformance to the limiting parameters.

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The RWM provides automatic supervision to assure that out-of-sequence control rods will not be withdrawn or inserted; i.e., it limits operator deviations from planned withdrawal sequences. It serves as an independent backup of the normal withdrawal procedure followed by the operator. In the event that the RWM is out of service when required, a second independent operator or engineer can manually fulfill the operator-follower control rod pattern conformance function of the RWM. In this case, procedural control is exercised by verifying all control rod positions after the withdrawal of each group, prior to proceeding to the next group. Allowing substitution of a second independent operator or engineer in case of RWM inoperability recognizes the capability to adequately monitor proper rod sequencing in an alternate manner without unduly restricting plant operations. Above 10% power, there is no requirement that the RWM be operable since the control rod drop accident with out-of-sequence rods will result in a peak fuel energy content of less than 280 cal/gm. To assure high RWM availability, the RWM is required to be operating during a startup for the withdrawal of a significant number of control rods for any startup.

(4) The source range monitor (SRM) system performs no automatic safety function. It does provide the operator with a visual indication of neutron level which is needed for knowledgeable and efficient reactor startup at low neutron levels. The results of reactivity accidents are functions of the initial neutron flux. The requirement of at least 3 cps assures that any transient at or above the initial value of 10^{-8} of rated power used in the analyses of transients from cold conditions. One operable SRM channel would be adequate to monitor the approach to critical using homogeneous patterns of scattered control rods. A minimum of three operable SRMs is required as an added conservation.

c. Scram Insertion Times

The revised scram insertion times have been established as the limiting condition for operation since the postulated rod drop analysis and associated maximum in-sequence control rod worth are based on the revised scram insertion times. The specified times are based on design requirements for control rod scram at reactor pressures above 950 psig. For reactor pressures above 800 psig and below 950 psig the measured scram times may be longer. The analysis discussed in the next paragraph is still valid since the use of the revised scram insertion times would result in greater margins to safety valves lifting.

f. Reactivity Anomalies

During each fuel cycle excess operating reactivity varies as fuel depletes and as any burnable poison in supplementary controls is burned. The magnitude of this excess reactivity is indicated by the integrated worth of control rods inserted into the core, referred to as the control rod inventory in the core. As fuel burnup progresses, anomalous behavior in the excess reactivity may be detected by comparison of actual rod inventory at any base equilibrium core state to predicted rod inventory at that state. Equilibrium xenon, samarium and power distribution are considered in establishing the steady-state base condition to minimize any source of error. During an initial period, (on the order of 1000 MWD/T core average exposure following core reloading or modification) rod inventory predictions can be normalized to actual rod patterns to eliminate calculational uncertainties. Experience with other operating BWR's indicates that the control rod inventory should be predictable to the equivalent of one percent in reactivity. Deviations beyond this magnitude would not be expected and would require thorough evaluation. One percent reactivity limit is considered safe since an insertion of this reactivity into the core would not lead to transients exceeding design conditions of the reactor system.

(1) Paone, C. J., Stirn, R.C., and Wooley, J.A., "Rod Drop Accident Analysis for Large Boiling Water Reactors," NEDO-10527, March 1972.

(2) Stirn, R. C., Paone, C. J., and Young, R. M., "Rod Drop Accident Analysis for Large BWRs," Supplement 1 - NEDO-10527, July 1972.

(3) Stirn, R. C., Paone, C. J., and Haun, J. M., "Rod Drop Accident Analysis for Large Boiling Water Reactors Addendum No. 2 Exposed Cores," Supplement 2 - NEDO-10527, January 1973.

(4) Report entitled "Technical Basis for Changes to Allowable Rod Worth Specified in Technical Specification 3.3.B.3," transmitted by letter from L. O. Mayer (NSP) to J. F. O'Leary (USAEC) dated October 4, 1973.

(5) Letter, R. R. Schneider, Niagara Mohawk Power Corporation to A. Giambusso, USAEC, dated November 15, 1973.

(6) To include the power spike effect caused by gaps between fuel pellets.

(7) NRC Safety Evaluation, "Acceptance for Referencing of Licensing Topical Report NEDE-24011-P-A, General Electric Standard Application for Reactor Fuel, Revision 8, Amendment 17," dated December 27, 1987.

ATTACHMENT D

NINE MILE POINT NUCLEAR STATION, LLC

LICENSE NO. DPR-63

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Environmental Considerations

The proposed amendment involves a change in the use of a facility component located within the restricted area, as defined in 10 CFR 20, and a change to a surveillance requirement. Nine Mile Point Nuclear Station, LLC, has reviewed the proposed amendment and determined that it does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.