UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 10, 1993

Docket No. 50-410

Mr. B. Ralph Sylvia
Executive Vice President, Nuclear
Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Dear Mr. Sylvia:

SUBJECT: ISSUANCE OF AMENDMENT FOR NINE MILE POINT NUCLEAR STATION, UNIT 2 (TAC NO. M86066)

The Commission has issued the enclosed Amendment No. 52 to Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit 2 (NMP-2). The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated March 22, 1993, as supplemented July 14, 1993, and September 14, 1993.

The amendment revises TS Section 6.9.1.9, "Core Operating Limits Report," to incorporate the SAFER/GESTR-LOCA methodology for accident analyses. The amendment also revises TS Bases Section 3/4.2 to reflect the addition of the SAFER/GESTR-LOCA methodology and to more clearly describe certain actions taken to avoid operation in excess of thermal limits.

A copy of the related Safety Evaluation (SE) is enclosed. As discussed in the SE, the staff has concluded that application of the SAFER/GESTR-LOCA methodology to NMP-2 is acceptable. However, we recommend that the possible impacts on the small break upper bound peak cladding temperature calculation be considered to ensure that the upper bound value remains less than the Appendix K peak cladding temperature, when changes to plant operating conditions occur which could affect LOCA analyses. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

John E. Menning

John E. Menning, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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Enclosures:
1. Amendment No. 52 to NPF-69
2. Safety Evaluation

cc w/enclosures:
See next page

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Executive Vice President, Nuclear
Niagara Mohawk Power Corporation
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Sincerely,
Original signed by:

John E. Menning, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 52 to NPF-69
2. Safety Evaluation

cc w/enclosures:
See next page

Distribution: See attached sheet

*See previous concurrence

LA:PDI-1	PM:PDI-1	OGC*	D:PDI-1		
CVogan	JMenning:smm	MYoung	RACapra		
11/9/93	11/9/93	11/04/93	11/10/93	/ /	/ /

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DATED: November 10, 1993

AMENDMENT NO. 52 TO FACILITY OPERATING LICENSE NO. NPF-69-NINE MILE POINT UNIT 2

Docket File
NRC & Local PDRs
PDI-1 Reading
S. Varga, 14/E/4
J. Calvo, 14/A/4
R. Capra
C. Vogan
J. Menning
OGC
D. Hagan, 3302 MNBB
G. Hill (2), P1-22
C. Grimes, 11/F/23
J. Donoghue, 8/E/23
ACRS (10)
OPA
OC/LFDCB
PD plant-specific file
C. Cowgill, Region I

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Niagara Mohawk Power Corporation

Nine Mile Point Nuclear Station
Unit 2

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 52
License No. NPF-69

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Niagara Mohawk Power Corporation (the licensee) dated March 22, 1993, as supplemented July 14, 1993, and September 14, 1993, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter 1;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-69 is hereby amended to read as follows:

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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 52 are hereby incorporated into this license. Niagara Mohawk Power Corporation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 10, 1993

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 52 TO FACILITY OPERATING LICENSE NO. NPF-69

DOCKET NO. 50-410

Revise Appendix A as follows:

Remove Pages	Insert Pages
6-23	6-23
B 3/4 2-4	B 3/4 2-4

CORE OPERATING LIMITS REPORT

6.9.1.9 (Continued)

2) The GESTR-LOCA and SAFER Models of the Evaluation of the Loss-of-Coolant Accident - SAFER/GESTR Application Methodology, NEDE-23785-1-PA, latest approved revision.

3) General Electric Standard Application for Reactor Fuel, NEDE-24011-P-A-US, latest approved revision.

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements shall be provided, upon issuance for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

SPECIAL REPORTS

6.9.2. Special reports shall be submitted in accordance with 10 CFR 50.4 within the time period specified for each report.

6.10 RECORD RETENTION

6.10.1 In addition to the applicable record retention requirements of Title 10, of the Code of Federal Regulations (10 CFR), the following records shall be retained for at least the minimum period indicated.

6.10.1.1 The following records shall be retained for at least 5 years:

a. Records and logs of unit operation covering time interval at each power level

b. Records and logs of principal maintenance activities, inspections, repair, and replacement of principal items of equipment related to nuclear safety

c. All REPORTABLE EVENTS submitted to the Commission

d. Records of surveillance activities, inspections, and calibrations required by these Technical Specifications

e. Records of changes made to the procedures required by Specification 6.8.1

f. Records of radioactive shipments

g. Records of sealed source and fission detector leak tests and results

h. Records of annual physical inventory of all sealed source material of record

BASES

3/4.2.3 MINIMUM CRITICAL POWER RATIO

3/4.2.3 (Continued)

while still allotting time for the power distribution to stabilize. The requirement for calculating MCPR, after initially determining that a LIMITING CONTROL ROD PATTERN exists, ensures MCPR will be known following a change in THERMAL POWER or power shape and therefore, operation while exceeding a thermal limit will be avoided.

3/4.2.4 LINEAR HEAT GENERATION RATE

This specification assures that the linear heat generation rate (LHGR) in any rod is less than the design linear heat generation rate even if fuel pellet densification is postulated. The daily requirement for calculating LHGR when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER is sufficient, since power distribution shifts are very slow when there have not been significant power or control rod changes. The requirement to calculate LHGR within 12 hours after the completion of a THERMAL POWER increase of at least 15% of RATED THERMAL POWER ensures thermal limits are met after power distribution shifts while still allotting time for the power distribution to stabilize. The requirement for calculating LHGR, after initially determining a LIMITING CONTROL ROD PATTERN exists, ensures that LHGR will be known following a change in THERMAL POWER or power shape and therefore, operation while exceeding a thermal limit will be avoided.

References

1. General Electric Company Analytical Model for Loss-of-Coolant Analysis in Accordance with 10 CFR 50, Appendix K, NEDE-20566, latest approved revision.

2. General Electric Standard Application for Reactor Fuel, NEDE-24011-P-A, latest approved revision.

3. The GESTR-LOCA and SAFER Models of the Evaluation at the Loss-of-Coolant Accident - SAFER/GESTR Application Methodology, NEDE 23785-1-PA, latest approved revision.

UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 52 TO FACILITY OPERATING LICENSE NO. NPF-69

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION, UNIT 2

DOCKET NO. 50-410

1.0 INTRODUCTION

By letter dated March 22, 1993, as supplemented July 14, 1993, and September 14, 1993, Niagara Mohawk Power Corporation (the licensee) submitted a request for changes to the Nine Mile Point Nuclear Station, Unit 2 (NMP-2), Technical Specifications (TSs). The requested changes would revise TS Section 6.9.1.9, "Core Operating Limits Report," to incorporate the SAFER/GESTR-LOCA methodology for accident analyses. The amendment would also revise TS Bases Section 3/4.2 to reflect the addition of the SAFER/GESTR-LOCA methodology and to more clearly describe certain actions taken to avoid operation in excess of thermal limits. The July 14, 1993, letter forwarded a copy of General Electric Report NEDC-31830P, Revision 1, "Nine Mile Point Nuclear Power Station Unit 2 SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis," November 1990 (Proprietary) for NRC staff review. The September 14, 1993, letter provided additional information relative to fuel peak cladding temperatures for the limiting small line break (0.1 ft^2). Neither the July 14, 1993, submittal nor the September 14, 1993, submittal provided information that changed the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

NRC staff acceptance of the SAFER/GESTR-LOCA methodology is described in a 1984 Topical Report Evaluation contained in General Electric Report NEDE-23785-1-PA, "The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident," Volume III, Revision 1, October 1984 (Proprietary). The SAFER/GESTR-LOCA methodology was accepted subject to the requirement that both the nominal and Appendix K peak cladding temperature (PCT_{NOM} and $PCT_{APP\ K}$) versus break size curves for the generic calculation for a given class of plants be demonstrated applicable to a specific plant. The necessary conditions for demonstrating applicability are:

A. Calculation of a sufficient number of plant-specific PCT_{NOM} and $PCT_{APP\ K}$ points to verify the shape of the PCT_{NOM} and $PCT_{APP\ K}$ versus break size curves. The trends of the plant-specific PCT_{NOM} and $PCT_{APP\ K}$ curves must follow the applicable generic case.

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B. Confirmation that plant-specific operating parameters have been bounded by the models and inputs used in the generic calculations.

C. Confirmation that the plant-specific emergency core cooling system (ECCS) configuration is consistent with the reference plant class ECCS configuration.

D. Restriction of the calculated upper bound cladding temperature to less than 1600 °F.

NEDC-31830P provided information confirming that the basic requirements for Items B, C, and D above are met for the NMP-2 SAFER/GESTR application. The plant-specific analyses include break sizes from 0.05 ft^2 to the design basis accident (DBA) recirculation suction line break. PCT_{NOM} values were determined for 11 break sizes, and $PCT_{APP\ K}$ values were determined for 8 break sizes. Eight points were used to establish the PCT_{NOM} curve over the break spectrum, and four points were used to establish the $PCT_{APP\ K}$ curve near the DBA. The input parameters were selected to yield conservative results relative to current NMP-2 design information and TS requirements. In support of a power uprate program, the analyses were performed at approximately 104.3 percent of rated thermal power, with a corresponding steam flow increase of approximately 5 percent. Limiting maximum average planar linear heat generation rate and power/exposure combinations were selected as inputs. Although the ECCS component configuration for NMP-2 matches the BWR 5/6 generic configuration, some parameters were selected to be conservative relative to current TS requirements or expected equipment performance. This was done to allow for subsequent changes to the TSs. Such conservative assumptions for the SAFER/GESTR analyses are permitted.

Item A of the list of conditions includes the stipulation that the plant-specific PCT versus break size curves match the generically determined trends. The PCT_{NOM} curve is formed using best-estimate values of plant response. The curve establishes the limiting break (normally the large break LOCA) which is used for subsequent calculations. $PCT_{APP\ K}$ is determined for the limiting case, and then an upper bound PCT (PCT_{UB}) is determined to confirm the conservatism of $PCT_{APP\ K}$. The analysis presented in NEDE-23785-1-PA uses assumptions arising from conditions based on the large break event. The requirements of the Topical Report Evaluation ensure that plant LOCA response does not significantly diverge from the generic LOCA response and possibly invalidate application of SAFER/GESTR-LOCA analysis assumptions.

The staff noted that the results of break calculations presented in the PCT versus break size plot in Figure 5-1 of NEDC-31830P are noticeably different from the generic break spectrum used for BWR 5 evaluation (Figure 3.4 in NEDE-23785-1-PA). Specifically, the NMP-2 PCT_{NOM} for a small break (0.1 ft^2) LOCA is close to the value for the normally limiting large break. Table 5-1 in NEDC-31830P indicates that PCT_{NOM} for the DBA is lower than that for the small break LOCA, but the difference is only 7 °F. In view of this small temperature difference, the staff could not conclusively determine that the generic and plant specific break curves were similar without additional information.

The licensee submitted additional information on September 14, 1993, that described an analytical determination of the PCT_{UB} for the small break to ensure that the large break LOCA is the limiting event. The process applied is based on a propagation of errors procedure described in Appendix A of NEDE-23785-1-PA. The analysis applied small break values from NEDE-23785-1-PA for parameters used to calculate PCT_{UB}. The results yielded a PCT_{UB} value below the $PCT_{APP\ K}$ calculated for the small break, validating this $PCT_{APP\ K}$. Further, the small break $PCT_{APP\ K}$ is significantly lower than the DBA $PCT_{APP\ K}$ value. This supports the contention that the large break LOCA is limiting. This supplemental analysis, largely based on the generic SAFER/GESTR evaluation, adequately demonstrated that the trends of the plant-specific PCT_{NOM} and $PCT_{APP\ K}$ curves follow the generic case.

The staff has concluded that application of SAFER/GESTR to NMP-2 is acceptable. However, when changes to plant operating conditions occur which could affect LOCA analyses, the licensee should consider possible impacts on the small break PCT_{UB} calculation to ensure that PCT_{UB} remains less than $PCT_{APP\ K}$.

3.0 TECHNICAL SPECIFICATIONS

The licensee proposed the following TS changes to accommodate implementation of SAFER/GESTR:

A. The generic SAFER/GESTR report, NEDE-23785-1-PA, would be added to the list of documents describing analytical methods contained in TS Section 6.9.1.9 and to the Bases reference list.

B. Two editorial changes, unrelated to SAFER/GESTR, would be made to Bases Section B 3/4.2 to more clearly describe certain actions taken to avoid operation in excess of thermal limits.

As stated above, the staff has concluded that application of SAFER/GESTR to NMP-2 is acceptable. The proposed changes to incorporate SAFER/GESTR into the TSs will result in core operating parameters determined such that the applicable limits of the safety analysis are met. Therefore, the proposed changes are acceptable. The staff notes that the proposed changes to Bases Section 3/4.2 are editorial and has no objections to these changes.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (58 FR 25858). The amendment also changes recordkeeping or reporting requirements. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (c)(10). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor:
J. Donoghue

Date: November 10, 1993