

February 13, 2004

Mr. Peter E. Katz
Vice President Nine Mile Point
Nine Mile Point Nuclear Station, LLC
P.O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION UNIT NO. 2 - ISSUANCE OF
AMENDMENT RE: BORON CONCENTRATION IN THE STANDBY LIQUID
CONTROL SYSTEM (TAC NO. MC0595)

Dear Mr. Katz:

The Commission has issued the enclosed Amendment No. 111 to Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit 2 (NMP2). The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated August 28, 2003.

The amendment revises Section 3.1.7, "Standby Liquid Control (SLC) System," to support a transition from GE11 to GE14 fuel in the NMP2 reactor core. The revised Section 3.1.7 raises the required calculated average boron concentration in the reactor from a concentration equivalent to 660 parts per million (ppm) natural boron to 780 ppm natural boron. The increased concentration is achieved by requiring use of sodium pentaborate solution enriched with the boron-10 isotope.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

\RA

Peter S. Tam, Senior Project Manager, Section I
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosures: 1. Amendment No. 111 to NPF-69
2. Safety Evaluation

cc w/encls: See next page

February 13, 2004

Mr. Peter E. Katz
Vice President Nine Mile Point
Nine Mile Point Nuclear Station, LLC
P.O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION UNIT NO. 2 - ISSUANCE OF
AMENDMENT RE: BORON CONCENTRATION IN THE STANDBY LIQUID
CONTROL SYSTEM (TAC NO. MC0595)

Dear Mr. Katz:

The Commission has issued the enclosed Amendment No. 111 to Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit 2 (NMP2). The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated August 28, 2003.

The amendment revises Section 3.1.7, "Standby Liquid Control (SLC) System," to support a transition from GE11 to GE14 fuel in the NMP2 reactor core. The revised Section 3.1.7 raises the required calculated average boron concentration in the reactor from a concentration equivalent to 660 parts per million (ppm) natural boron to 780 ppm natural boron. The increased concentration is achieved by requiring use of sodium pentaborate solution enriched with the boron-10 isotope.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

\RA

Peter S. Tam, Senior Project Manager, Section I
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosures: 1. Amendment No. 111 to NPF-69
2. Safety Evaluation

cc w/encls: See next page

Distribution:

PUBLIC	PDI-1 R/F	RLaufer	SLittle
Ptam	OGC	GHill (2)	TBoyce
Mlangschwager	AAttard	RTjader	ACRS
CBixler, RI			

ACCESSION NUMBER: **ML040350553**

OFFICE	PDI-1\PM	PDI-1\LA	SRXB/SC	IROB/SC	OGC	PDI-1/SC
NAME	PTam	SLittle	FAkstulewicz*	TBoyce	RHoefling	PTam for RLaufer
DATE	2/4/04	2/4/04	2/12/04*	2/13/04	2/11/04	2/13/04

OFFICIAL RECORD COPY

*Safety evaluation transmitted by memo of this date.

NINE MILE POINT NUCLEAR STATION, LLC (NMPNS)

LONG ISLAND LIGHTING COMPANY

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 111
License No. NPF-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Nine Mile Point Nuclear Station, LLC (the licensee) dated August 28, 2003, 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:

(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. 111 are hereby incorporated into this license. Nine Mile Point Nuclear Station, LLC 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 and shall be implemented prior to startup from Refueling Outage 9.

FOR THE NUCLEAR REGULATORY COMMISSION

\RA by P. Tam

Richard J. Laufer, Chief, Section I
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 13, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 111

TO FACILITY OPERATING LICENSE NO. NPF-69

DOCKET NO. 50-410

Replace the following pages of Appendix A, Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3.1.7-3

3.1.7-4

Insert Pages

3.1.7-3

3.1.7-4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 111 TO FACILITY OPERATING LICENSE NO. NPF-69
NINE MILE POINT NUCLEAR STATION, LLC (NMPNS)
NINE MILE POINT NUCLEAR STATION, UNIT 2
DOCKET NO. 50-410

1.0 INTRODUCTION

By letter dated August 28, 2003, Nine Mile Point Nuclear Station, LLC (NMPNS or the licensee) proposed a license amendment to change the Technical Specifications (TSs) for the Nine Mile Point Nuclear Station, Unit No. 2 (NMP2). The amendment would revise Section 3.1.7, "Standby Liquid Control (SLC) System," of the TSs to support a transition from GE11 to GE14 fuel in the NMP2 reactor core. Specifically, the proposed amendment would raise the required average boron concentration in the reactor core from 660 ppm natural boron to a concentration equivalent to 780 ppm natural boron. The licensee plans to accomplish this by using sodium pentaborate solution enriched with the boron-10 isotope. As a result, the licensee will (1) add a new Surveillance Requirement (SR) 3.1.7.10 to verify the sodium pentaborate solution boron-10 enrichment prior to addition to the SLC tank; and (2) revise Figure 3.1.7-1, "Sodium Pentaborate Solution Volume/Concentration Requirements," to add a notation regarding the required boron-10 enrichment, and make a minor correction to one of the coordinates that define the Acceptable Operation region on the figure.

2.0 REGULATORY EVALUATION

The SLC system is an independent reactivity control system that provides shutdown capability under normal and anticipated transient without scram (ATWS) conditions (requirements of 10 CFR 50.62(c)(4)). The shutdown capability requirements of the SLC system during normal operation is specified in Title 10 of the *Code of Federal Regulations*, Part 50 (10 CFR Part 50), Appendix A, General Design Criterion (GDC) 26. Compliance with GDC 26 requires that two independent reactivity control systems of different design principles be provided, with one of the systems being capable of holding the reactor core subcritical under cold conditions. The control rods provide the normal method for reactivity control, and are capable of maintaining the reactor subcritical, including allowance for a stuck rod, without the addition of any soluble neutron absorber (i.e., boron) to the reactor coolant.

The SLC system functions as a backup to the insertion of control rods to provide a diverse means of making the reactor subcritical. To comply with GDC 26, the SLC system must have an adequate amount of neutron absorber in solution, and the capability to inject at a rate sufficient to bring the reactor from rated power to cold shutdown, at any time in core life, with the control rods remaining withdrawn in the rated power pattern. The SLC system must also take into account the reactivity gains from complete decay of the xenon inventory derived from rated power operation, an allowance for imperfect mixing and leakage, and dilution by the residual heat removal system.

As a licensee increases fuel bundle enrichment and core reactivity to meet the cycle energy requirements, the SLC system shutdown boron concentration must also be increased to continue satisfying the reactivity control requirements of GDC 26. The licensee must calculate a cycle-specific SLC shutdown concentration for each cycle's core design to confirm that the SLC system boron concentration will satisfy the cold shutdown capability requirements.

The current SLC boron solution concentration requirements comply with the requirements of 10 CFR 50.62(c)(4). The licensee's proposed change to use sodium pentaborate solution enriched with the boron-10 isotope to support a transition to the GE14 fuel design does not affect the SLC system flow rate or the acceptable solution volumes and concentrations depicted on TS Figure 3.1.7-1. Thus, the SLC system will continue to comply with the requirements of 10 CFR 50.62(c)(4) for plant operation with a core containing GE14 fuel.

3.0 TECHNICAL EVALUATION

The Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment, which are described in Sections 3.0 and 4.0 of the licensee's submittal.

The licensee determined it is necessary to increase the SLC system boron concentration from 660 parts per million (ppm) of natural boron to a concentration equivalent to 780 ppm natural boron in order to meet the SLC shutdown objectives during the next cycle (Operating Cycle 10) of operation with GE14 fuel. The licensee employed Global Nuclear Fuel (GNF) to determine the new concentration. GNF used approved methods described in Topical Report NEDE 24011-P-A, "General Electric Standard Application for Reactor Fuel (GESTAR II)," Revision 14. This concentration analysis is bounding for Operating Cycle 10, which will use both GE11 and GE14 fuel designs, and for currently planned future core designs.

Natural boron contains 19.8 atom percent of the boron-10 isotope. Boron-10, with its large neutron absorption capability, is the active component in sodium pentaborate. In order to achieve the increased neutron absorber concentration equivalent to 780 ppm natural boron, the licensee plans to use sodium pentaborate solution enriched with the boron-10 isotope. The enriched solution is chemically and physically similar to the solution currently used by the licensee. The use of sodium pentaborate enriched with the boron-10 isotope provides a faster negative reactivity insertion rate than the same quantity of sodium pentaborate with natural boron.

The existing SLC system design requires injection of a quantity of boron that includes an additional 20 percent above that needed for an in-vessel boron concentration of 660 ppm, to allow for imperfect mixing and leakage. As part of this proposed change, the licensee will increase the quantity of boron included to allow for imperfect mixing and leakage from 20 percent to 25 percent. Operation within the Acceptable Operation region of TS Figure 3.1.7-1, with a sodium pentaborate enrichment of ≥ 25 atom percent boron-10 in accordance with the new SR 3.1.7.10 will achieve the required concentration equivalent to 780 ppm natural boron in the reactor core. This change is consistent with the Bases for TS 3.1.7 contained in NUREG-1434, "Standard Technical Specifications General Electric Plants, BWR/6," Revision 2.1, dated March 27, 2002.

3.1 Proposed TS Changes

The licensee proposed the following specific TS changes:

- (1) A new SR 3.1.7.10 is added. This SR requires verification that the sodium pentaborate solution boron-10 enrichment is greater than or equal to 25 atom percent boron-10. This new SR ensures that the required neutron absorber concentration in the reactor core increases from the current 660 ppm natural boron to a value equivalent to 780 ppm natural boron. The licensee stated that this proposed change is consistent with NUREG-1434, "Standard Technical Specifications General Electric Plants, BWR/6," Revision 2.1, dated March 27, 2002.
- (2) The current Figure 3.1.7-1 consists of a graph that defines acceptable SLC tank volume and concentration values, such that the required boron concentration in the reactor core will be achieved. The licensee proposed to revise Figure 3.1.7-1 by adding a notation regarding the required boron-10 enrichment, consistent with the proposed new SR 3.1.7.10 (above). In addition, the licensee proposed to correct one of the coordinates that defines the Acceptable Operation region, changing the current required volume of 4275 gallons at 14.4 percent to 4288 gallons. This correction results from different roundoff techniques used in the prior volume calculation versus the present calculation. This correction constitutes less than 1% of the required number of gallons. Furthermore, the original and the corrected numbers both fall in a range far below the low-level alarm volume of 4418 gallons (i.e., operators would have restored the volume to above 4418 in response to the alarm).

3.2 Summary of Review

As delineated above, the NRC staff finds that the proposed TS changes are acceptable since the SLC system will continue to provide the required shutdown margin under normal operating conditions pursuant to 10 CFR Part 50, Appendix A, GDC 26, and 10 CFR 50.62(c)(4).

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 use of a facility component located within the restricted area as defined in 10 CFR Part 20, and a surveillance requirement. 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 (68 FR 56345). Accordingly, the amendment meets 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 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 Contributors: M. Langschwager
A. Attard

Date: February 13, 2004

Nine Mile Point Nuclear Station, Unit No. 2

cc:

Regional Administrator, Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector
Nine Mile Point Nuclear Station
P.O. Box 126
Lycoming, NY 13093

Mr. James R. Evans
LIPA
P.O. Box 129
Lycoming, NY 10393

Supervisor
Town of Scriba
Route 8, Box 382
Oswego, NY 13126

Mr. Paul D. Eddy
Electric Division
NYS Department of Public Service
Agency Building 3
Empire State Plaza
Albany, NY 12223

Charles Donaldson, Esquire
Assistant Attorney General
New York Department of Law
120 Broadway
New York, NY 10271

C. Adrienne Rhodes
Chairman and Executive Director
State Consumer Protection Board
5 Empire State Plaza, Suite 2101
Albany, NY 12223-1556

Mark J. Wetterhahn, Esquire
Winston & Strawn
1400 L Street, NW.
Washington, DC 20005-3502

Mr. Michael J. Wallace
President
Nine Mile Point Nuclear Station, LLC
c/o Constellation Energy Group
750 East Pratt Street
Baltimore, MD 21202

James M. Petro, Jr., Esquire
Counsel
Constellation Energy Group, Inc.
750 East Pratt Street, 5th Floor
Baltimore, MD 21202

Mr. Peter R. Smith, Acting President
New York State Energy, Research,
and Development Authority
17 Columbia Circle
Albany, NY 12203-6399