April 11, 1988

Docket No. 50-410

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Mr. C. V. Mangan
Senior Vice President
Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Dear Mr. Mangan:

The Commission has issued the enclosed Amendment No. 3 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 in response to your application transmitted by letter dated August 3, 1987, as supplemented August 6, September 3, November 24, 1987 and February 19, 1988 (TAC 65898).

This amendment revises the service water supply header discharge temperature limit in Technical Specification 3/4.7.1 to 81°F.

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

Sincerely,

/S/

Mary F. Haughey, Project Manager
Project Directorate I-1
Division of Reactor Projects, I/II

Enclosures:
1. Amendment No. 3 to NPF-69
2. Safety Evaluation

cc: w/enclosures
See next page

Concur w/changes in SE as noted
NPIT

PDI-1	PDI-1	OGC	PDI-1
CVogan	MHaughey:mak	NPIT	RCapra
3/29/88	3/3/88	3/10/88	4/11/88

4/07/88
Changes from 82° to 81° not necessary per telephone conversation

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

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 3
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 August 3, 1987, as supplemented August 6, September 3, November 24, 1987 and February 19, 1988, 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 I;

   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. 3 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 11, 1988

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 3 TO FACILITY OPERATING LICENSE NO. NPF-69

DOCKET NO. 50-410

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 7-1	3/4 7-1
3/4 7-2	3/4 7-2
3/4 7-4	3/4 7-4
3/4 7-5	3/4 7-5

3/4.7.1 PLANT SERVICE WATER SYSTEM

PLANT SERVICE WATER SYSTEM - OPERATING

LIMITING CONDITIONS FOR OPERATION

3.7.1.1 Two independent plant service water system loops shall be OPERABLE with one loop in operation. Each loop shall be comprised of:

a. Two plant service water pumps capable of taking suction from Lake Ontario and transferring the water to the associated safety related equipment.

b. Service water supply header discharge water temperature of 81°F or less.

The intake deicing heater system shall be OPERABLE and in operation when intake tunnel water temperature is less than 39°F; Division I shall have 7 heaters in operation in each intake structure and Division II shall have 7 heaters in operation in each intake structure.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3

ACTION:

a. With one less than the required number of OPERABLE plant service water pumps in one loop, restore the inoperable pump to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. With one less than the required number of OPERABLE plant service water pumps in each loop, restore at least one inoperable pump to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

c. Within two less than the required number of OPERABLE plant service water pumps in one loop or with one plant service water loop otherwise inoperable, restore at least one pump to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

d. With two less than the required number of OPERABLE plant service water pumps in one loop and one less than the required number of plant service water pumps in the other loop, restore at least one of the two inoperable pumps in the same loop to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

e. With two plant service water system loops OPERABLE and the service water supply header discharge water temperature continuously exceeding 81°F for any 8 hour period, within one hour initiate action to be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

LIMITING CONDITIONS FOR OPERATION

3.7.1.1 (Continued)

ACTION:

f. With less than the required Division I and Division II heaters OPERABLE within one hour initiate action to be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.1.1 The plant service water system shall be demonstrated OPERABLE.

a. By verifying the plant service water supply header discharge water temperature to be less than or equal to 81°F.

   1. At least once per 24 hours, and

   2. At least once per 4 hours when the last recorded water temperature is greater than or equal to 75°F, and

   3. At least once per 2 hours when the last recorded water temperature is greater than or equal to 79°F.

b. At least once per 12 hours by verifying the water level at the service water pump intake is greater than or equal to elevation 233.1 feet.

c. At least once per 31 days by verifying that each valve - manual, power-operated, or automatic, servicing safety-related equipment that is not locked, sealed or otherwise secured in position - is in its correct position.

d. At least once per 18 months during shutdown, by verifying:

   1. After a simulated test signal, each automatic valve servicing nonsafety-related equipment actuates to its isolation position.

   2. After a simulated test signal, each service water system cross connect and pump discharge valve actuates automatically to its isolation position.

   3. For each service water pump, after a simulated test signal, the pump starts automatically and the associated pump discharge valve opens automatically, in order to supply flow to the system safety-related components.

PLANT SERVICE WATER SYSTEM - SHUTDOWN

LIMITING CONDITIONS FOR OPERATION

3.7.1.2 Two independent plant service water system loops shall be OPERABLE with one loop in operation. Each loop shall be comprised of:

a. Two OPERABLE plant service water pumps capable of taking suction from Lake Ontario and transferring the water to the associated safety-related equipment.

b. Service water supply header discharge water temperature of 81°F or less.

The intake deicing heater system shall be OPERABLE and in operation when intake tunnel water temperature is less than 39°F; Division I shall have 7 heaters in operation in each intake structure and Division II shall have 7 heaters in operation in each intake structure.

APPLICABILITY: OPERATIONAL CONDITIONS 4 and 5.

ACTION:

a. With one less than the required number of OPERABLE plant service water pumps in one loop, restore the inoperable pump to OPERABLE status within 30 days or declare the associated safety-related equipment inoperable and take ACTIONS required by Specifications 3.5.2 and 3.8.1.2.

b. With one less than the required number of OPERABLE plant service water pumps in each loop, restore at least one inoperable pump to OPERABLE status within 7 days or declare the associated safety-related equipment inoperable and take ACTIONS required by Specification 3.5.2 and 3.8.1.2.

c. With two less than the required number of OPERABLE plant service water pumps in one loop, restore at least one inoperable pump to OPERABLE status within 72 hours or declare the associated safety-related equipment inoperable and take ACTIONS required by Specification 3.5.2 and 3.8.1.2.

d. With two less than the required number of OPERABLE plant service water pumps in one loop and one less than the required number of plant service water pumps in the other loop, restore at least one of the two inoperable pumps in the same loop to OPERABLE status within 12 hours or declare the associated safety-related equipment inoperable and take ACTIONS required by Specification 3.5.2 and 3.8.1.2.

e. With the service water supply header discharge temperature exceeding 81°F suspend CORE ALTERATIONS and all operations that have a potential for draining the reactor vessel.

LIMITING CONDITIONS FOR OPERATION

3.7.1.2 (Continued)

ACTION:

f. With less than the required Division I and Division II heaters OPERABLE, suspend CORE ALTERATIONS and all operations that have a potential for draining the reactor vessel.

SURVEILLANCE REQUIREMENTS

4.7.1.2.1 The plant service water system shall be demonstrated OPERABLE:

a. By verifying the plant service water supply header discharge water temperature to be less than or equal to 81°F:

   1. At least once per 24 hours, and

   2. At least once per 4 hours when the last recorded water temperature is greater than or equal to 75°F, and

   3. At least once per 2 hours when the last recorded water temperature is greater than or equal to 79°F.

b. At least once per 12 hours by verifying the water level at the service water pump intake is greater than or equal to elevation 233.1 feet.

c. At least once per 31 days by verifying that each valve - manual, power-operated, or automatic, servicing safety-related equipment that is not locked, sealed, or otherwise secured in position - is in its correct position.

d. At least once per 18 months during shutdown, by verifying:

   1. After a simulated test signal, each automatic valve servicing nonsafety-related equipment actuates to its isolation position.

   2. After a simulated test signal, each service water system cross connect and pump discharge valve actuates automatically to its isolation position, and

   3. For each service water pump, after a simulated test signal, the pump starts automatically and the associated pump discharge valve opens automatically, in order to supply flow to the system safety-related components.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 3 TO FACILITY OPERATING LICENSE NO. NPF-69

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR POWER STATION, UNIT NO. 2

DOCKET NO. 50-410

INTRODUCTION

By letter dated August 3, 1987 as supplemented by letters dated August 6, September 3, November 24, 1987 and February 19, 1988, the licensee requested a revision to Technical Specification (TS) 3/4.7.1 to allow a maximum service water supply header discharge temperature limit of 81°F.

The specific Technical Specification changes were to change 76°F to 81°F in the following pages:

PAGE		SECTION
3/4 7-1	Limiting Condition for Operation and Action	3.7.1.1.b e
3/4 7-2	Surveillance Requirements	4.7.1.1.1.a
3/4 7-4	Limiting Condition for Operation and Action	3.7.1.2.b e
3/4 7-5	Surveillance Requirements	4.7.1.2.1.a

and to revise the surveillance requirements as follows:

PAGE		SECTION
3/4 7-2	revise 70°F to 75°F	4.7.1.1.1.a.2
	revise 74°F to 79°F	4.7.1.1.1.a.3
3/4 7-5	revise 70°F to 75°F	4.7.1.2.1.a.2
	revise 74°F to 79°F	4.7.1.2.1.a.3

consistent with the 5°F increase in the allowable service water temperature.

In its August 3, 1987 submittal, the licensee proposed to change the maximum allowable service water supply header discharge water temperature limit from 76°F to 81°F. The licensee provided analyses to support a design limit of 82°F, thus allowing a margin of 1°F over the proposed TS limit. This margin is consistent with the original analyses and the existing TS. The licensee stated that the change in the service water temperature was initiated as a result of the unusually hot weather conditions this past summer.

Based on an earlier request dated July 22, 1987, the staff approved a temporary increase (i.e., during the startup program up to power levels below 50% of rated power) of the allowable service water temperature limit from 76°F to 77°F.

In spite of this allowed increase, the service water temperature exceeded 77°F a few times during the past summer and resulted in a plant shutdown on July 26, 1987. Therefore, past history has established the need for the current proposed TS change.

The August 6, 1987 submittal corrected a reference to 10 CFR 50.91(a)(c) and provided additional supporting information for the no significant hazards determination.

The September 3, 1987 submittal contained additional information relating to the licensee's safety evaluation of the effects of the proposed changes on the reactor building closed loop cooling water (RBCLCW) and residual heat removal (RHR) heat exchangers and corrected the overall heat transfer coefficient (U) and the heat transfer coefficent for the RHR heat exchangers (K).

The November 24, 1987 submittal updated the licensee's safety evaluation to include clarification relating to the review of the effects of the proposed change on the RBCLCW system and the Category I Unit Coolers and Chillers.

The February 19, 1988 submittal confirmed that changes had been made to the Equipment Qualification Environmental Design Criteria (EQEDC) to incorporate the new calculated design normal maximum temperatures that would result from the increased service water temperature.

The September 3, 1987, November 24, 1987 and February 19, 1988 supplements to the August 3 and 6, 1987 submittals did not affect the proposed Technical Specification changes as noticed in the Federal Register (FR) on August 14, 1987 because the information was clarification of information provided in the original amendment requests and did not affect the staff's proposed no significant hazards determinations. The FR notice advised the public that the proposed amendment concerned the items as discussed above. The supplemental information merely provided additional details concerning the proposed changes and did not constitute information different from the subject of the FR notice.

EVALUATION

The service water system provides cooling water to the following safety-related equipment:

Standby Emergency Diesel Generators (Division I, II, and III)
Hydrogen Recombiners
Spent Fuel Pool Cooling Heat Exchangers
Residual Heat Removal (RHR) Pump Seal Coolers
Category I Chiller
Category I Unit Coolers
RHR Heat Exchangers

In its submittals, the licensee discussed the effect of the proposed increase of the service water temperature limit on the heat removal capability, equipment qualification and accident and transient evaluations of the above equipment. The following discusses the effect on each piece of equipment as well as the staff's evaluation.

Diesel Generators - The licensee stated that the Division I and II diesels and Division III diesels are rated for operation with cooling water temperatures of 85°F for Division I and II and 95°F for Division III. Therefore, an increase in the service water supply temperature from 77°F to 82°F would not affect the design limit of these diesel generators.

Hydrogen Recombiners - The licensee indicated that service water is used in the recombiner water spray aftercooler to cool the recombiner exhaust gas to protect the concrete surrounding the penetration from high temperature through which the exhaust gases pass. The aftercooler is sized based upon 180°F supply water temperature. Recombiners are tripped at an exhaust gas temperature of 250°F to assure adequate margin to limit the concrete temperature to below 350°F per ASME Code. Therefore, an increase in the service water temperature from 77°F to 82°F would not compromise the integrity of the concrete surrounding the penetration.

Spent Fuel Pool (SFP) Cooling Heat Exchangers - Cooling water to the SFP cooling heat exchanger is provided by the RBCLCW system during normal operation and by service water during emergency conditions. The SFP heat exchangers are designed for a cooling water supply temperature of 95°F based on RBCLCW system temperature. Since the SFP heat exchangers are based upon 95°F cooling water design temperature, an increase in service water temperature to 82°F would not cause these heat exchangers to exceed their design limit.

RHR Pump Seal Coolers - The licensee stated that these coolers are designed for a maximum cooling water temperature of 105°F. Therefore, the proposed increase in service water supply temperature will have no adverse effect on the design performance of these coolers.

RBCLCW Heat Exchangers - The non-safety related RBCLCW system provides cooling during normal operation to various reactor plant equipment including SFP heat exchangers and rejects its heat to the service water system. During emergency conditions, service water provides direct cooling to all safety related equipment serviced by the RBCLCW system. RBCLCW heat exchangers are designed to supply water at 95°F at maximum duty with service water temperature at 77°F.

The licensee stated that normally, RBCLCW system temperature is maintained at 86°F per operating procedure N2-OP-13, and if the temperature exceeds 90°F, an alarm in the control room is initiated, and in accordance with the above procedure, an additional heat exchanger is put in service or heat loads are removed from the RBCLCW system. As the RBCLCW temperature will be maintained below 95°F in accordance with the above procedures even in the event service water temperature goes as high as 82°F, there will be no adverse effect on the capability of the equipment serviced by the RBCLCW system.

Category I Chiller - Category I chiller provides chilled water for cooling the control room areas. The licensee indicated that it has a design capacity of 140 tons at 81°F service water temperature as verified by vendor test data. This capacity exceeds the maximum calculated cooling duty by 20%.

Given this margin, the environment controlled by the chiller would not be affected by 82°F service water temperature.

Category I Unit Coolers - Service water provides the heat sink for unit coolers of safety-related ventilation systems. The licensee has analyzed the impact of 82°F service water temperature to unit coolers on average and normal maximum area temperature (NMAT) for equipment qualification. In the revised analysis, the licensee stated that it used actual maximum electric loads as supported by performance test data in lieu of rated motor loads. The revised analysis has indicated that with the exception of three mild environmental zones in the control building, expected NMAT will not exceed the normal maximums according to EQEDC.

The three mild environmental zones are the Divisions I and II cable areas and the Division I riser area, all located on elevation 237 feet, where the currently specified design NMAT is 104°F. New calculated NMATs, based on 82°F service water, in the above three zones are 107°F, 106.4°F and 108°F, respectively. The licensee stated that they have checked the vendor qualification data for all equipment located in these zones and concluded that there is a minimum margin of 10°F between the vendor qualification temperatures and the NMAT. Furthermore, the licensee stated that it has accounted for internal panel temperature rise in accordance with vendor test data for panel mounted equipment when determining that a 10°F margin remains.

The licensee stated that the average temperature is based on long term average winter and average summer temperatures and that the effect of using 82°F service water temperature, which is expected only a few days in a year, will be negligible.

The change in the service water temperature is small and appears to have correspondingly small effects on the environmental conditions at the plant.

In a letter dated February 19, 1988, the licensee stated that the EQEDC has been updated to incorporate the new calculated design normal maximum temperatures that could be experienced in three zones in the control building in the event the service water supply header discharge water temperature rose to 81°F. The revision of the EQDEC assures that replacement equipment in these zones will be procured in accordance with the new design normal maximum temperatures.

Secondary Containment Response - Secondary containment drawdown time is governed by the reactor building unit cooler heat removal capacity. This capacity is determined by the temperature difference between the service water and the reactor building average temperature. The licensee stated that this temperature difference will be maintained administratively within its design limits and, therefore, an increase in service water temperature will not affect the secondary containment drawdown time.

RHR Heat Exchangers - The licensee had earlier performed four post-accident containment response analyses (large, intermediate and small break accident and steam bypass analyses), the NUREG-0783 safety relief valve transient analysis, and the failure of RHR shutdown cooling (alternate shutdown cooling using 77°F service water temperature for RHR heat-exchangers). These analyses could potentially be affected by using 82°F service water temperature.

The licensee stated in its submittal of September 3, 1987, that the RHR heat exchangers are supplied by General Electric (GE) with 20% more capacity than required to cool the plant from hot shutdown to 125°F within 20 hours under normal capacity. The excess capacity was added to allow for a possible increase in duty for the RHR steam condensing mode, which was not completely established at the time the heat-exchangers were ordered. Subsequently, GE determined that shutdown cooling mode duty enveloped the steam condensing mode. The excess duty was not assumed in the various transient analyses (four post-accidents, SRV transient and RHR shutdown cooling) performed earlier with 77°F service water temperature. The licensee has stated that new calculations, performed for the above transient analyses using the same assumptions and methodology as earlier, indicate that the 20% increase in the RHR heat removal capacity more than offsets the 5°F increase in service water temperature and that the results of all transient analyses performed earlier remain valid. Therefore, there will be no adverse effect on the RHR system performance as a result of a 5°F increase in the service water temperature.

Pipe Stress/Pipe Supports - The licensee stated that the effects of the proposed increase in service water temperature on the service water piping, including the components serviced by this system, have been evaluated in accordance with the ASME Code Section III and all stresses and loads are within the ASME Code Section III and the vendor allowables.

SUMMARY

Based on the above, the staff concludes that the licensee has demonstrated that an increase in service water temperature from 77°F to 82°F would not effect the performance of the equipment served by it. The staff further concludes that allowing for the 1°F margin for the service water temperature as originally specified between the design and TS limit, the proposed changes to TS 3/4.7.1 plant service water system as discussed above are acceptable.

ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The 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 this amendment involves no significant hazards consideration and

there has been no public comment on such finding. Accordingly, this 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 this assessment.

CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: April 11, 1988

PRINCIPAL CONTRIBUTOR:

R. Goel