



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

June 8, 2018

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT 2 - ISSUANCE OF AMENDMENT
NO. 170 RE: REMOVAL OF NOTE ASSOCIATED WITH SURVEILLANCE
REQUIREMENT 3.5.1.2 (CAC NO. MG0148; EPID L-2017-LLA-0294)

Dear Mr. Hanson:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 170 to Renewed Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit 2 (Nine Mile Point 2). The amendment consists of changes to the Nine Mile Point 2 Technical Specifications in response to your application dated August 22, 2017. A copy of your application is in the Agencywide Documents Access and Management System under Accession No. ML17234A025.

The amendment revises Nine Mile Point 2 Technical Specifications by removing a note associated with Surveillance Requirement 3.5.1.2 that allowed low pressure coolant injection subsystems to be considered operable in MODE 3 under certain conditions.

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

Sincerely,

A handwritten signature in black ink that reads "Michael L. Marshall, Jr." with a stylized flourish at the end.

Michael L. Marshall, Jr., Senior Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosures:

1. Amendment No. 170 to NPF-69
2. Safety Evaluation

cc: Listserv



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

NINE MILE POINT NUCLEAR STATION, LLC

LONG ISLAND LIGHTING COMPANY

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 170
Renewed License No. NPF-69

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (Exelon, the licensee) dated August 22, 2017, 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 Renewed 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. 170, are hereby incorporated into this license. Exelon Generation 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 within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License and Technical
Specifications

Date of Issuance: June 8, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 170

NINE MILE POINT NUCLEAR STATION, UNIT 2

RENEWED FACILITY OPERATING LICENSE NO. NPF-69

DOCKET NO. 50-410

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Page
4

Insert Page
4

Replace the following page of Appendix A, Technical Specifications, with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove Page
3.5.1-4

Insert Page
3.5.1-4

(1) Maximum Power Level

Exelon Generation is authorized to operate the facility at reactor core power levels not in excess of 3988 megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.

(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. 170, are hereby incorporated into this license. Exelon Generation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Fuel Storage and Handling (Section 9.1.SSER 4)*

- a. Fuel assemblies, when stored in their shipping containers, shall be stacked no more than three containers high.
- b. When not in the reactor vessel, no more than three fuel assemblies shall be allowed outside of their shipping containers or storage racks in the New Fuel Vault or Spent Fuel Storage Facility.
- c. The above three fuel assemblies shall maintain a minimum edge-to-edge spacing of twelve (12) inches from the shipping container array and approved storage rack locations.
- d. The New Fuel Storage Vault shall have no more than ten fresh fuel assemblies uncovered at any one time.

(4) Turbine System Maintenance Program (Section 3.5.1.3.10 SER)

The operating licensee shall submit for NRC approval by October 31, 1989, a turbine system maintenance program based on the manufacturer's calculations of missile generation probabilities. (Submitted by NMPC letter dated October 30, 1989 from C.D. Terry and approved by NRC letter dated March 16, 1990 from Robert Martin to Mr. Lawrence Burkhardt, III).

* The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report (SER) and/or its supplements wherein the license condition is discussed.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	<p>-----NOTE-----</p> <p>Not required to be met for system vent paths opened under administrative control.</p> <p>-----</p> <p>Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	<p>Verify:</p> <p>a. For each ADS nitrogen receiver discharge header, the pressure is ≥ 160 psig; and</p> <p>b. For each ADS nitrogen receiver tank, the pressure is ≥ 334 psig.</p>	In accordance with the Surveillance Frequency Control Program

(continued)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 170

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-69

NINE MILE POINT NUCLEAR STATION, LLC

LONG ISLAND LIGHTING COMPANY

EXELON GENERATION COMPANY, LLC.

NINE MILE POINT NUCLEAR STATION, UNIT 2

DOCKET NO. 50-410

1.0 INTRODUCTION

By letter dated August 22, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17234A025), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request for a change to the Nine Mile Point Nuclear Station, Unit 2, (Nine Mile Point 2) Technical Specifications (TSs). The requested change would remove a note associated with Surveillance Requirement (SR) 3.5.1.2 that allowed low pressure coolant injection (LPCI) subsystems to be considered operable in MODE 3 under certain conditions.

Currently, the Nine Mile Point 2 TS 3.5.1.2 contains a note that requires the residual heat removal (RHR) system be capable of manual realignment to the LPCI mode and not be otherwise inoperable. This note was added as a part of the Nine Mile Point 2 Improved Technical Specification campaign intended to provide clarity that LPCI may be considered operable during alignment and operation in the shutdown cooling (SDC) mode.

The RHR system is used in the SDC mode to remove residual heat from the nuclear system to maintain reactor water inventory below 212 degrees Fahrenheit (°F) so that refueling and nuclear system servicing can be performed.

The licensee's application dated August 22, 2017 (i.e., license amendment request (LAR)), provided revised TS Bases pages to be implemented with the associated TS changes. These pages were provided for information only. Changes to the TS Bases should be made in accordance with the licensee's TS Bases Control Program.

2.0 REGULATORY EVALUATION

2.1 Description of System Design and Operation

The safety function of the emergency core cooling system (ECCS) is to provide core cooling following a loss-of-coolant accident (LOCA). The ECCS consists of two high-pressure and two low-pressure systems. The high-pressure systems are the high-pressure core spray (HPCS) system and the automatic depressurization system. The low-pressure systems are the LPCI mode of RHR and the low-pressure core spray (LPCS) system.

The manner in which the ECCS operates to protect the core is a function of the rate at which reactor coolant inventory is lost from the break. The HPCS is designed to operate while the reactor coolant system is at high pressure. The LPCS and LPCI are designed for operation at low pressures. If the break in the nuclear system process barrier is of such a size that the loss-of-coolant exceeds the capability of the HPCS, reactor pressure decreases at a rate fast enough for the low pressure ECCSs to commence coolant injection into the reactor vessel in time to cool the core. Automatic depressurization is provided to reduce reactor pressure if a break has occurred and the HPCI system is inoperable.

The RHR system is a low pressure system that can be used for cooling and or inventory control. The primary purposes (i.e., modes) of the RHR system are 1) the LPCI mode to automatically initiate and maintain reactor water level following a LOCA, and 2) the containment spray mode is employed following a LOCA to condense steam for primary containment pressure reduction and to reduce airborne activity in the primary containment following a LOCA. The RHR system consists of three independent closed loops, each containing a motor driven pump.

The SDC mode of the RHR system is operated during normal unit cooldown and shutdown to remove decay heat. The RHR system is placed in the SDC mode of operation when nuclear system temperature has decreased to where the steam supply pressure is not sufficient to maintain the turbine shaft gland seals and the vacuum in the main condenser cannot be maintained.

2.2 Description of Change

The proposed change will delete the following Note associated with TS SR 3.5.1.2:

Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the residual heat removal cut-in permissive pressure in MODE 3 (Hot Shutdown), if capable of being manually realigned and not otherwise inoperable.

2.3 Description of Applicable Regulatory Requirements

The regulatory requirements that the U.S. Nuclear Regulatory Commission (NRC) staff considered in its review of the proposed amendment included the following:

Title 10 of the *Code of Federal Regulations* (10 CFR) 50, Appendix A, "General Design Criteria for Nuclear Power Plants," describe necessary design and performance requirements for structures, systems, and components important to safety. The applicable general design criteria are applicable to the proposed amendment:

- Criterion 34, "Residual Heat Removal," requires that a system to remove residual heat be provided with a safety function to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.
- Criterion 35, "Emergency core cooling," requires that a system to provide abundant emergency core cooling be provided with a safety function to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented and, (2) clad metal-water reaction is limited to negligible amounts.
- Criterion 37, "Testing of Emergency Core Cooling System," requires that the ECCS design provide the capability for periodic pressure and functional testing. This testing shall assure (1) structural and leak-tight integrity of components, (2) operability and performance of active components, (3) operability of the whole system under conditions as close to design as possible.

Section 50.36, "Technical Specifications," of 10 CFR details the content and information that must be included in a station's TS. In accordance with 10 CFR 50.36, TSs are required to include (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. As described in 10 CFR 50.36(c)(2), "Limiting conditions for operation," are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO is not met, the licensee shall shut down the reactor or follow any other actions permitted by TS.

Section 50.46(a)(1)(i) of 10 CFR requires that each boiling or pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy or ZIRLO cladding be provided with an ECCS designed with a calculated cooling performance in accordance with an acceptable evaluation model following a postulated LOCA.

3.0 TECHNICAL EVALUATION

Industry operating experience has demonstrated that manually realigning a RHR SDC subsystem from SDC to LPCI could result in water flashing to steam in the RHR piping, water hammer, or pressure locking or thermal binding of valves unless the RHR SDC piping is first allowed to cool. In the LAR the licensee stated that this operating experience is applicable to Nine Mile Point 2, in that the design of the RHR system could be susceptible to this same phenomenon and that removal of the TS 3.5.1.2 Note is conservative and would prevent water flashing, and water hammer in the RHR piping.

An NRC Information Notice (IN) 2010-11 (ADAMS Accession No. ML100640465) describes an issue during operation in MODE 3, the potential exists for the water in the RHR pump suction piping aligned for SDC to flash/boil when realigned to the LPCI mode. This phenomenon is due to the physical arrangement (i.e., common interface) of the SDC and LPCI suction lines for the RHR pumps. The realignment from SDC mode to LPCI mode transfers the suction source for the RHR pump; thereby exposing the high temperature SDC water to the low pressure LPCI suction piping from the Suppression Pool. The resultant flashing or boiling of the high pressure,

high temperature water when introduced to the low pressure piping could result in voiding in the suction piping, RHR pump cavitation, water hammer and associated RHR system damage. This threat is greatest during the early stages of MODE 3 operation when the SDC water temperature is highest. Nine Mile Point has implemented procedure changes/restrictions preventing the realignment of an RHR subsystem from SDC to LPCI mode as a result of NRC IN 2010-11.

Licensee's review of the potential for valve thermal binding found that the LPCI injection valves and the RHR pump min flow valves could be susceptible to thermal binding. The licensee's evaluation has shown that this condition exists at Nine Mile Point 2 when the differential temperature across the valve exceeds 60°F, as it may be when the valve is closed to support SDC mode of operation. This temperature differential results from the high temperature SDC water on one side of the valve and cool suppression pool water on the other side. The flashing or boiling in the RHR suction piping and the RHR valve thermal binding are the result of the RHR system design that supports several different operating modes using common equipment. This design feature, and the associated temperature phenomenon, prevents timely realignment of the RHR subsystem from SDC mode to LPCI mode.

Based on the above, the NRC staff finds that the current Note in TS 3.5.1.2 could potentially allow operating conditions to exist that could adversely impact the function of the RHR system. Specifically, high pressure, high temperature water when introduced to the low pressure piping could result in voiding in the suction piping, RHR pump cavitation, water hammer and associated RHR system damage. Therefore, the staff finds that removal of the Note is acceptable and the applicable regulatory requirements will continue to be met.

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 on May 10, 2018. 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, and changes surveillance requirements. 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 (82 FR 60227). 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 staff 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) there is reasonable assurance that 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: FForsaty, NRR

Date: June 8, 2018

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT 2 - ISSUANCE OF AMENDMENT NO. 170 RE: REMOVAL OF NOTE ASSOCIATED WITH SURVEILLANCE REQUIREMENT 3.5.1.2 (CAC NO. MG0148; EPID L-2017-LLA-0294) DATED JUNE 8, 2018

DISTRIBUTION:

PUBLIC
 PM File Copy
 RidsNrrDorlLpl1
 RidsRgn1MailCenter
 RidsACRS_MailCTR
 RidsNrrLAIBetts
 RidsNrrPMNineMilePoint
 RidsNrrDssSrx
 FForsaty, NRR

ADAMS Accession No.: ML18131A291

*by memo

OFFICE	DORL/LPL1/PM	DORL/LPL1/LA	OGC	DSS/SRXB/BC	DORL/LPL1/BC
NAME	MMarshall	IBetts	JGillespie	JWhitman*	JDanna
DATE	5/17/18	5/16/18	5/29/18	4/27/18	6/7/18
OFFICE	DORL/LPL1/PM				
NAME	MMarshall				
DATE	6/8/18				

OFFICIAL RECORD COPY