



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

October 5, 2017

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: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 – ISSUANCE OF
AMENDMENT RE: CHANGES TO TECHNICAL SPECIFICATIONS 5.4.2, 6.1.2,
AND 6.2.2 (CAC NO. MF9462)

Dear Mr. Hanson:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 293 to Renewed Facility Operating License No. DPR-50 for the Three Mile Island Nuclear Station, Unit 1, in response to your application dated March 22, 2017.

The amendment (1) updates Technical Specification (TS) 5.4.2 for the current number of fuel assemblies and number of reactor cores that are stored in Spent Fuel Pool A; (2) revises TS 6.1.2 requirements for the Chief Nuclear Officer to eliminate the annual management directive to all unit personnel responsible for the control room command function; and (3) deletes the TS Section 6.2.2.2.d footnote that referenced Control Room Supervisors who do not possess a Senior Reactor Operator NRC License.

A copy of our 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, appearing to read "Justin C. Poole", with a long horizontal line extending to the right.

Justin C. Poole, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosures:

1. Amendment No. 293 to DPR-50
2. Safety Evaluation

cc w/enclosures: Distribution via Listserv



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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-289

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 293
Renewed License No. DPR-50

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (the licensee), dated March 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 that (i) the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) 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. DPR-50 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 293, are hereby incorporated in the license. The Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

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: October 5, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 293
THREE MILE ISLAND NUCLEAR STATION, UNIT 1
RENEWED FACILITY OPERATING LICENSE NO. DPR-50
DOCKET NO. 50-289

Replace the following page of the Renewed Facility Operating License with the revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove
4

Insert
4

Replace the following pages of the 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
5-7
6-1
6-1a

Insert
5-7
6-1
6-1a

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 293, are hereby incorporated in the license. The Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

(3) Physical Protection

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans¹, submitted by letter dated May 17, 2006, is entitled: "Three Mile Island Nuclear Station Security Plan, Training and Qualification Plan, and Safeguards Contingency Plan, Revision 3." The set contains Safeguards Information protected under 10 CFR 73.21.

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Exelon Generation Company CSP was approved by License Amendment No. 275 and modified by License Amendment No. 288.

(4) Fire Protection

Exelon Generation Company shall implement and maintain in effect all provisions of the Fire Protection Program as described in the Updated FSAR for TMI-1.

Changes may be made to the Fire Protection Program without prior approval by the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Temporary changes to specific fire protection features which may be necessary to accomplish maintenance or modifications are acceptable provided that interim compensate measures are implemented.

- (5) The licensee shall implement a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program shall include:
- a. Identification of a sampling schedule for the critical parameters and control points for these parameters;
 - b. Identification of the procedures used to measure the values of the critical parameters;
 - c. Identification of process sampling points;
 - d. Procedure for the recording and management of data;

¹ The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.

5.4.2 SPENT FUEL STORAGE (Reference 1)

- a. Irradiated fuel assemblies will be stored, prior to offsite shipment, in the stainless steel lined spent fuel pools, which are located in the fuel handling building.
- b. Whenever there is fuel in the pool except for initial fuel loading, the spent fuel pool is filled with water borated to the concentration used in the reactor cavity and fuel transfer canal.
- c. Deleted.
- d. The fuel assembly storage racks provided and the number of fuel elements each will store are listed by location below:

	Spent Fuel Pool A North End of Fuel Handling Building	Spent Fuel Pool B South End of Fuel Handling Building	Dry New Fuel Storage Area Fuel Handling Building
Fuel Assys.	1494 *	496	54
Cores	8.44	2.8	0.37

NOTE: * Includes three spaces for accommodating failed fuel containers.

- e. All of the fuel assembly storage racks provided are designed to Seismic Class 1 criteria to the accelerations indicated below:

	Fuel Handling Building Dry New Fuel Storage Area And Spent Fuel Pool A	Fuel Handling Building Spent Fuel Pool B
Horiz.	0.38 g	**
Vertical	0.25 g	**

NOTE: ** The "B" pool fuel storage racks are designed using the floor response spectra of the Fuel Handling Building.

- f. DELETED
- g. When spent fuel assemblies are stored in the Spent Fuel Pool "A", Region II storage locations, the combination of initial enrichment and cumulative burnup for spent fuel assemblies shall be within the acceptable area of Figure 5-4.
- h. When spent fuel assemblies are stored in the Spent Fuel Pool "B", storage locations, the combination of initial enrichment and cumulative burnup for spent fuel assemblies shall be within the acceptable area of Figure 5-5.

REFERENCES

- (1) UFSAR, Section 9.7 - "Fuel Handling System"

6.0 ADMINISTRATIVE CONTROLS

6.1 RESPONSIBILITY

6.1.1 The Vice President-TMI Unit 1 shall be responsible for TMI-1 operations and may, at any time, delegate his responsibilities in writing to the Plant Manager. He shall delegate the succession of his responsibilities in writing during his absence.

6.1.2 The Control Room Supervisor (CRS) shall be responsible for the control room command function. During any absence of the CRS from the control room while the unit is in POWER OPERATION, STARTUP, HOT STANDBY, or HOT SHUTDOWN, an individual with an active Senior Reactor Operator (SRO) license shall be designated to assume the control room command function. During any absence of the CRS from the control room while the unit is in COLD SHUTDOWN or REFUELING SHUTDOWN, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.

6.2 ORGANIZATION

6.2.1 CORPORATE

6.2.1.1 An onsite and offsite organization shall be established for unit operation and corporate management. The onsite and offsite organization shall include the positions for activities affecting the safety of the nuclear power plant.

6.2.1.2 Lines of authority, responsibility and communication shall be established and defined from the highest management levels through intermediate levels to and including operating organization positions. These relationships shall be documented and updated as appropriate, in the form of organizational charts. These organizational charts will be documented in the Updated FSAR and updated in accordance with 10 CFR 50.71e.

6.2.1.3 The Chief Nuclear Officer shall have corporate responsibility for overall plant nuclear safety and shall take measures to ensure acceptable performance of the staff in operating, maintaining, and providing technical support so that continued nuclear safety is assured.

6.2.2 UNIT STAFF

6.2.2.1 The Vice President-TMI Unit 1 shall be responsible for overall site safe operation and shall have control over those on site activities necessary for safe operation and maintenance of the site.

6.2.2.2 The unit staff organization shall meet the following:

- a. Each on-duty shift shall be composed of at least the minimum shift crew composition shown in Table 6.2-1.
- b. At least one licensed Reactor Operator shall be present in the control room when fuel is in the reactor.

- c. At least two licensed Reactor Operators shall be present in the control room during reactor startup, scheduled reactor shutdown and during recovery from reactor trips.
- d. The Shift Manager or Control Room Supervisor shall be in the control room at all times other than cold shutdown conditions ($T_{ave} < 200^{\circ}\text{F}$) when he shall be onsite.
- e. An individual ## qualified pursuant to 6.3.2 in radiation protection procedures shall be on site when fuel is in the reactor.
- f. All REFUELING OPERATIONS shall be observed and directly supervised by either a licensed Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation.
- g. A Site Fire Brigade ## of at least 5 members shall be maintained onsite at all times. The Site Fire Brigade shall not include members of the minimum shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency.
- h. The Shift Technical Advisor shall serve in an advisory capacity to the Shift Manager on matters pertaining to the engineering aspects assuring safe operation of the unit.

6.2.2.3 Individuals who train the operating staff and those who carry out the health physics and quality assurance function shall have sufficient organizational freedom to be independent from operating pressures, however they may report to the appropriate manager on site.

The individual of item 6.2.2.2e and the Fire Brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence provided immediate action is taken to fill the required positions.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 293 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-50

EXELON GENERATION COMPANY, LLC

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

DOCKET NO. 50-289

1.0 INTRODUCTION

By application dated March 22, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17081A425), Exelon Generation Company, LLC (the licensee) requested changes to the Technical Specifications (TSs) for Three Mile Island Nuclear Station, Unit 1 (TMI-1). The changes (1) updated TS 5.4.2, "Spent Fuel Storage," for the current number of fuel assemblies and number of reactor cores that are stored in Spent Fuel Pool A; (2) revised TS Section 6.1.2 to eliminate the annual requirement for the Chief Nuclear Officer (CNO) to issue a signed management directive to all unit personnel responsible for the control room command function; and (3) deleted the footnote associated with TS Section 6.2.2.2.d that references control room supervisors that do not possess a senior reactor operator (SRO) license.

2.0 REGULATORY EVALUATION

The regulatory requirements and guidance that the U.S. Nuclear Regulatory Commission (NRC or the Commission) staff considered in its review of the license amendment request are as follows:

- Title 10 of the *Code of Federal Regulations* (CFR) Section 50.36 "Technical specifications," paragraph (c)(5) provides requirements for the content of the TSs in the category "Administrative Controls." These requirements include provisions related to organization and management to assure operation of the facility in a safe manner.
- 10 CFR 50.120, "Training and qualification of nuclear power plant personnel," paragraph (b)(2)(ii), includes shift supervisors in the list of nuclear plant personnel that must be trained and qualified in accordance with a training program derived from a systems approach to training as defined in 10 CFR 55.4, "Definitions."
- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 13, "Conduct of Operations," Section 13.1.2 - 13.1.3, "Operating Organization," Revision 7, dated August 2016, provides guidance for NRC staff review of the assignments of on-shift operating crews including shift supervisors/managers.

- NUREG-1430, "Standard Technical Specifications – Babcock and Wilcox Plants," Revision 4, "Volume 1, Specifications" (ADAMS Accession No. ML12100A177), April 2012, TS 5.1.2.
- Regulatory Guide 1.8, Revision 3, "Qualification and Training of Personnel for Nuclear Power Plants" (ADAMS Accession No. ML003706932), Section 2.8, related to ANSI/ANS-3.1-1993, "Selection, Qualification, and Training of Personnel for Nuclear Power Plants," Section 4.4.1, "Operations Shift Supervisor," and Section 4.4.2, "Senior Operator." This standard is referenced in TMI-1 TS 6.3.1 with regard to unit staff qualifications.

3.0 TECHNICAL EVALUATION

3.1 Proposed Change to TS 5.4.2

Current TS 5.4.2, paragraph 5.4.2.d, states:

The fuel assembly storage racks provided and the number of fuel elements each will store are listed by location below:

Spent Fuel Pool A North End of Fuel Handling Building	Spent Fuel Pool B South End of Fuel Handling Building	Dry New Fuel Storage Area Fuel Handling Building
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Fuel Assys.	1062*	496	54
Cores	6.0	2.8	0.37

NOTE:* Includes three spaces for accommodating failed fuel containers. An additional 432 storage locations can be installed to provide a total of 1494 locations or 8.44 cores.

Proposed TS 5.4.2, paragraph d, to be revised as follows:

The fuel assembly storage racks provided and the number of fuel elements each will store are listed by location below:

Spent Fuel Pool A North End of Fuel Handling Building	Spent Fuel Pool B South End of Fuel Handling Building	Dry New Fuel Storage Area Fuel Handling Building
---	---	--

Fuel Assys.	1494	496	54
Cores	8.44	2.8	0.37

NOTE:* Includes three spaces for accommodating failed fuel containers.

NRC Staff Evaluation

As stated by the licensee in its application in 1992, the NRC approved changes to the TMI-1 TSs to reflect installation of new spent fuel storage racks allowing for additional storage capacity through its issuance of Amendment No. 164, dated April 27, 1992 (ADAMS Accession No. ML003766347). This amendment increased the overall capacity of Spent Fuel Pool A from 253 to 1494 locations. This amendment recognized that in order to get to 1494 locations, the modifications to the spent fuel pool would occur over time, with only 846 of the cells being installed at the time of its issuance. The March 22, 2017, application states that the final phase of the spent fuel pool modifications were completed in 2009. Additionally, TMI-1 Updated Final Safety Analysis Report (UFSAR), Revision 23, Chapter 9, "Auxiliary and Emergency Systems," Table 9.7-1, "Fuel Storage Capabilities" (ADAMS Accession No. ML16127A508), states that Spent Fuel Pool A has 1494 locations installed.

Since Amendment No. 164 had previously approved a total of 1494 storage locations for Spent Fuel Pool A, and since this application is requesting to update the TMI-1 TS to reflect that all 1494 storage locations are now installed, the NRC staff concludes that the proposed changes to TS 5.4.2 are acceptable.

3.2 Proposed Change to TS 6.1.2

Current TS Section 6.1.2 states:

The Shift Manager (or during his absence from the Control Room, a designated individual), shall be responsible for the Control Room command function. A management directive to this effect signed by the Chief Nuclear Officer shall be reissued to all unit personnel on an annual basis.

Proposed TS Section 6.1.2 would be revised as follows:

The Control Room Supervisor (CRS) shall be responsible for the control room command function. During any absence of the CRS from the control room while the unit is in POWER OPERATION, STARTUP, HOT STANDBY, or HOT SHUTDOWN, an individual with an active Senior Reactor Operator (SRO) license shall be designated to assume the control room command function. During any absence of the CRS from the control room while the unit is in COLD SHUTDOWN or REFUELING SHUTDOWN, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.

NRC Staff Evaluation

The licensee's proposed modification to TS 6.1.2 would remove the CNO annual management directive requirement regarding the qualifications of the unit staff performing the control room command function. The licensee also notes that the revised wording is consistent with Standard TS 5.1.2 as described in NUREG-1430, Revision 4, Volume 1, Specifications. The licensee's submittal describes the CNO annual directive as a legacy requirement that was added as part of the rewrite of the TMI-1 administrative section of the TSs following the accident at TMI Unit 2. TMI-1 is now part of the Exelon Generation Company, LLC fleet, and adopting the language of Standard TS 5.1.2, as proposed, would standardize TMI-1 with the TS language adopted by most of the other nuclear sites in the fleet.

NUREG-0800 includes acceptance criteria for NRC staff to apply in evaluations. Chapter 13, "Conduct of Operations," Section 13.1.2 – 13.1.3, "Operating Organization," Revision 7, dated August 2016, Subsection III, "Acceptance Criteria," Item 1.d.iii states, in part:

A licensed senior reactor operator shall, at all times, be in the control room from which a reactor is being operated.

The proposed change to TMI-1 TS Section 6.1.2 reassigns the unit staff position responsible for the control room command function from the Shift Manager to the Control Room Supervisor (CRS). However, the proposed change comports with the above guidance and is more prescriptive than the current wording, in that the qualifications of the unit staff designated to assume the control room command function are specified as an SRO or Reactor Operator, depending on plant conditions (i.e., reactor in an operating or non-operating condition). Additionally, the TMI-1 UFSAR, Revision 23, Chapter 12, "Conduct of Operations," Section 12.1.2.1.1, "Operations Department" (ADAMS Accession No. ML16127A516), states that CRSs are responsible for the actual operation of the unit on their assigned shift and that CRSs must be SRO licensed.

The proposed change to TS 6.2.1 specifies the requirement that the control room command function must be staffed by an SRO qualified individual when the unit is in an operating condition and the associated licensing basis also reflects that the CRS must be SRO qualified. The NRC staff concludes that removing the CNO annual management directive from TS 6.2.1 is acceptable and the revised wording maintains appropriate requirements regarding the control room command function.

3.3 Proposed Change to TS Section 6.2.2.2.d

Current TS Section 6.2.2.2.d states:

The Shift Manager or Control Room Supervisor # shall be in the control room at all times other than cold shutdown conditions ($T_{ave} < 200^{\circ}\text{F}$) when he shall be onsite.

If not SRO licensed, he shall have completed the SRO Training program.

Proposed TS Section 6.2.2.2.d would be revised to delete the associated footnote as follows:

The Shift Manager or Control Room Supervisor shall be in the control room at all times other than cold shutdown conditions ($T_{ave} < 200^{\circ}\text{F}$) when he shall be onsite.

NRC Staff Evaluation

As described in Section 3.2 of this safety evaluation, Section 12.1.2.1.1 of the TMI-1 UFSAR states that CRSs are responsible for the actual operation of the unit on their assigned shift and that CRSs must be SRO licensed. Section 12.1.2.1.1 of the TMI-1 UFSAR also states that the Shift Manager must be SRO licensed as well. In addition, TMI-1 TS Table 6.2.1 identifies the minimum shift crew composition requirements regarding SRO qualifications per 10 CFR 50.54(m). Therefore, the NRC staff concludes that removal of the footnote associated with TS Section 6.2.2.2.d is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the official from the Commonwealth of Pennsylvania was notified of the proposed issuance of the amendment on September 25, 2017. The 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 (82 FR 35840; August 1, 2017). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(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) 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 Contributors: J. Hughey
J. Poole

Date: October 5, 2017

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 - ISSUANCE OF AMENDMENT RE: CHANGES TO TECHNICAL SPECIFICATIONS 5.4.2, 6.1.2, AND 6.2.2 (CAC NO. MF9462) DATED OCTOBER 5, 2017

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ADAMS Accession No.: ML17233A138 *by memorandum dated **by email dated

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