



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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November 22, 2018

MEMORANDUM TO: Douglas A. Broaddus, Chief
Special Projects and Process Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Joseph D. Anderson, Chief /RA/
Reactor Licensing Branch
Division of Preparedness and Response
Office of Nuclear Security and Incident Response

SUBJECT: SAFETY EVALUATION INPUT FOR PROPOSED CHANGES TO
THE THREE MILE ISLAND NUCLEAR STATION EMERGENCY
PLAN FOR POST-SHUTDOWN AND PERMANENTLY
DEFUELED CONDITION

By application dated March 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18078A578), and as supplemented by letters dated August 13, 2018 (ADAMS Accession No. ML18225A180) and November 20, 2018 (ADAMS Accession No. ML18324A404), Exelon Generation Company, LLC, requested approval by the U.S. Nuclear Regulatory Commission for proposed changes to the Three Mile Island Nuclear Station, Unit 1 (TMI) Site Emergency Plan (SEP), as required under section 50.54(q)(4) of Title 10 of the *Code of Federal Regulations* (10 CFR), prior to implementation by the licensee to support the planned permanent cessation of operations and permanent defueling of the TMI Unit 1 reactor. The proposed changes would revise the TMI SEP emergency response organization on-shift and augmented staffing commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled power reactor facility.

The Reactor Licensing Branch has completed a technical and regulatory review of the proposed TMI SEP changes and supporting documentation. We have concluded that the proposed TMI SEP continues to meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. As such, the TMI SEP continues to provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the TMI site. The basis for our conclusion is contained in the enclosed safety evaluation input.

Enclosure:
Safety Evaluation Input

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D. Broaddus

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DATED: November 22, 2018

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DATE	11/07/18	11/07/18	11/20/18

OFFICIAL AGENCY RECORD

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. XXX

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 letter dated June 20, 2017 (Reference 1), in accordance with sections 50.82(a)(1)(i) and 50.4(b)(8) to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," Exelon Generation Company, LLC (Exelon, or the licensee), informed the U.S. Nuclear Regulatory Commission (NRC or Commission) that Three Mile Island Nuclear Station, Unit 1 (TMI) would permanently cease power operations on or about September 30, 2019. Upon the NRC's docketing of the Exelon certification that all fuel has been permanently removed from the reactor vessel and placed into the spent fuel pool (SFP) pursuant to 10 CFR 50.82(a)(2), the license for TMI will no longer authorize operation of the reactor, or emplacement or retention of fuel into the reactor vessel. The irradiated fuel will be stored in the SFP until an onsite independent spent fuel storage installation (ISFSI) is built at TMI.

By application dated March 19, 2018 (Reference 2), and as supplemented by letters dated August 13, 2018 (Reference 3), and November 20, 2018 (Reference 4), Exelon requested approval by the NRC of proposed changes to the TMI Site Emergency Plan (SEP), as required under 10 CFR 50.54(q)(4), prior to implementation by the licensee, to support the planned permanent cessation of operations and permanent defueling of the TMI Unit 1 reactor. The proposed changes would revise the TMI SEP emergency response organization (ERO) on-shift and augmented staffing commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled nuclear power reactor facility. As a result of the transition from an operating facility to a permanently defueled facility, the proposed changes will properly reflect the conditions of the facility, while continuing to maintain effectiveness of the TMI SEP. In addition, the proposed changes also relocate full augmentation positions from the TMI SEP to be maintained and controlled in the emergency Plan implementing procedures (EPIPs).

Three Mile Island, Unit 2 (TMI-2), has a possession only license and is currently maintained in accordance with the NRC approved SAFSTOR condition (method in which a nuclear facility is placed and maintained in a condition that allows it to be safely stored and subsequently decontaminated) known as Post-Defueling Monitored Storage (PDMS). In their application dated March 19, 2018, Exelon states, in part:

[...] Exelon maintains the emergency planning responsibilities for TMI-2, which is owned by First Energy Corporation, through a service agreement. This License Amendment Request (LAR) does not impact Exelon's ability to maintain the service agreement.

Enclosure

The supplemental letters dated August 13, 2018 and November 20, 2018, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's proposed no significant hazards consideration determination as published in the *Federal Register* on XXXX XX, 201X (82 FR XXXXX).

2.0 REGULATORY EVALUATION

An operating nuclear power reactor licensee's emergency plan is developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at TMI Unit 1, most of the accident scenarios postulated for an operating power reactor will no longer be possible. The irradiated fuel will be stored in the SFP until an ISFSI is built at the TMI site. The reactor, reactor coolant system (RCS), and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving a failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable.

Chapter 14, "Safety Analysis," of the TMI Final Safety Analysis Report as Updated (UFSAR) describes the abnormal operational transients and design-basis accident (DBA) scenarios that are applicable during plant operations. The postulated DBAs that will remain applicable to TMI Unit 1 in its permanently shutdown and defueled condition are a Fuel Handling Accident (FHA) in the SFP, Cask Drop Accident in the SFP, and a Waste Gas Tank Rupture. The licensee states that FSAR Chapter 14 will be revised to eliminate the DBAs that will no longer be applicable in the permanently defueled condition.

The regulatory requirements and guidance on which the NRC staff based its review of the LAR are addressed below.

2.1 Regulatory Requirements

Section 10 CFR 50.47(b)(1) states, in part, that "each principal response organization has staff to respond and to augment its initial response on a continuous basis."

Section 10 CFR 50.47(b)(2) states, in part, that "adequate staffing to provide initial facility accident response in key functional areas [be] maintained at all times," and that "timely augmentation of response capabilities is available. [...]"

Section IV.A, "Organization," of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, states, in part, that "[t]he organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization. [...]"

Section IV.D.3, "Notification Procedures," of Appendix E to 10 CFR Part 50, states, in part, that "[a] licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency."

Section 10 CFR 50.72(a)(3) states that "[t]he licensee shall notify the NRC immediately after notification of the appropriate State or local agencies and not later than one hour after the time the licensee declares one of the Emergency Classes."

2.2 Guidance

Regulatory Guide (RG) 1.101, Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors," October 1981 (Reference 5), provides guidance on methods acceptable to the NRC staff for implementing the planning standards of 10 CFR 50.47(b), and the requirements of Sections IV of Appendix E to 10 CFR Part 50. Revision 2 of RG 1.101 endorses Revision 1 to NUREG-0654/FEMA-REP-1 [Federal Emergency Management Agency – Radiological Emergency Preparedness], "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980 (referred to hereafter as NUREG-0654) (Reference 6), which provides specific evaluation criteria for complying with the planning standards set forth in 10 CFR 50.47. These evaluation criteria provide a basis for NRC licensees, and State and local governments to develop radiological emergency plans.

In NUREG-0654, Section II, "Planning Standards and Evaluation Criterion," Evaluation Criteria II.B.1 and II.B.5 address planning standard 10 CFR 50.47(b)(2). Evaluation Criterion II.B.1 specifies the onsite emergency organization of plant staff personnel for all shifts, and its relation to the responsibilities and duties of the normal shift complement. In addition, Evaluation Criterion II.B.5, states, in part:

Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.

The NRC's Office of Nuclear Security and Incident Response (NSIR)/Division of Preparedness and Response (DPR) Interim Staff Guidance (ISG) document - NSIR/DPR-ISG-01, "Emergency Planning for Nuclear Power Plants," November 2011 (Reference 7), provides updated guidance information to address emergency planning requirements for nuclear power plants. Specifically, NSIR/DPR-ISG-01 was developed to address the assignment of tasks or responsibilities to on-shift ERO personnel that would potentially overburden them and prevent the timely performance of their emergency plan functions. The ISG also endorsed the Nuclear Energy Institute (NEI) document NEI 10-05, Revision 0, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," June 2011 (Reference 8), which was developed to establish a standard methodology for licensees to perform analyses of the ability of on-shift staff to perform all required functions and tasks necessary to respond to a declared emergency for an operating power reactor. Licensees are able to use this methodology as an acceptable method to meet the requirement of Section IV.A.9 to Appendix E of 10 CFR Part 50 for all accident scenarios that are applicable in a permanently defueled condition.

3.0 TECHNICAL EVALUATION

The TMI SEP consists of the following documents:

- EP-TM-1000, "Three Mile Island Radiological Emergency Plan" (Emergency Plan);

- EP-AA-1009, “Radiological Emergency Plan Annex for Three Mile Island (TMI) Station” (Annex);
- EP-AA-1009, Addendum 1, “Three Mile Island Station On-Shift Staffing Technical Basis;”
- EP-AA-1009, Addendum 2, “Evacuation Time Estimates for Three Mile Island Plume Exposure Pathway Emergency Planning Zone,” and
- EP-AA-1009, Addendum 3, “Emergency Action levels for Three Mile Island (TMI) Station.”

The NRC staff reviewed the licensee’s regulatory and technical analyses in support of its proposed emergency plan changes, as described in the licensee’s letter dated March 19, 2018, and as supplemented by letters dated August 13, 2018, and November 20, 2018. The NRC staff reviewed the request using the evaluation criteria in Table B-1 of NUREG-0654, as well as the licensee’s ability to promptly implement the SFP mitigation strategies, as required. The NRC staff’s technical evaluation for each major functional area of Table B-1 to NUREG-0654 is detailed in Sections 3.1 through 3.15 of this safety evaluation.

In Section 2.2, “On-Shift Staffing,” of Attachment 1, “Description and Evaluation of Proposed Changes,” to the letter dated March 19, 2018, the licensee stated, in part:

To support reduced staffing following permanent cessation of operations and permanent removal of fuel from the reactor vessel, the staffing levels have been evaluated by reviewing NUREG-0654 [...] and validating the conclusion, in part, using the methodology in NEI 10-05 [...], which evaluates the postulated accidents that will be applicable in the permanently defueled condition.

In Section 4.2, “Three Mile Island Station On-Shift Staffing,” of Attachment 1 to the letter dated March 19, 2018, the licensee stated, in part:

In December 2012, an initial on-shift staffing assessment (OSA) was completed in accordance with the NEI 10-05 guidance to satisfy the requirements of 10 CFR 50, Appendix E, Section IV.A.9. This assessment examined the capability of the existing minimum staff to perform the key emergency response actions for events described in the ISG until augmenting ERO staff arrive.

In support of this LAR, the Post Shutdown Staffing Analysis was conducted using the guidance of NEI 10-05 and a summary of the results is provided in Section 5.3.1.

Specifically, the licensee stated that the following accident scenarios were evaluated in the analysis of proposed post-shutdown on-shift staff:

- Design basis threat,
- Fuel handling accident,
- Waste gas tank rupture,
- Aircraft potential threat,
- Worst case fire (requiring evacuation of the Control Room),
- General Emergency with radioactive release and protective action recommendation (PAR), and
- Station blackout.

The spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel is reduced, as compared to an operating plant. Operating nuclear power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. When Exelon certifies the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at TMI, most of the accident scenarios postulated for an operating power reactor will no longer be possible. The irradiated fuel will be stored in the SFP, and ISFSI when constructed, and will remain onsite until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems will no longer be in operation, and will have no functions related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems will be no longer applicable. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel onsite.

As discussed previously, the postulated DBAs that will remain applicable to TMI Unit 1 in its permanently shutdown and defueled condition are a FHA in the SFP, Cask Drop Accident in SFP, and a Waste Gas Tank Rupture. The licensee stated that UFSAR Chapter 14 will be revised to eliminate the DBAs that will not be applicable in the permanently defueled condition.

In Section 5.2.5, "Major Functional Area: Plant System Engineering, Repair and Corrective Action," of Attachment 1 to the March 19, 2018 letter, the licensee stated, in part:

The primary events of concern in the immediate post-shutdown and defueled condition will be a fuel handling accident and a loss of SFP cooling and/or water inventory. Events involving a loss of SFP cooling and/or water inventory can be addressed by implementation of the SFP inventory makeup strategies, as required under License Condition 2.c.(17), "Mitigation Strategy License Condition," and 10 CFR 50.54(hh)(2).

In Section 5.2.7, "Major Functional Area: Fire Fighting," of Attachment 1 to the letter dated March 19, 2018, the licensee stated, in part:

The Fire Brigade is in addition to the Operations minimum staff (3) described in Section 5.2.1, since the fire brigade shall not include members of the minimum shift crew required for other essential functions during a fire emergency. The fire brigade team will be able to support the Shift Manager in Repair and Corrective Action activities when not engaged in performing firefighting duties, and are credited with performing mitigation strategies required by 50.54(hh) and FLEX [Diverse and Flexible Coping Strategies] strategies for the SFP. When the incipient fire brigade staffing is implemented it will remain adequate to support mitigating and FLEX strategy actions.

3.1 Major Functional Area: Plant Operations and Assessment of Operational Aspects

The TMI SEP currently identifies the following Unit 1 Operations on-shift staffing:

- One (1) Shift Manager,
- One (1) Control Room Supervisor,
- Two (2) Control Room (Reactor) Operators, and

- Two (2) Auxiliary Operators.

The licensee's post-shutdown OSA concluded that in a permanently shutdown and defueled condition, with the postulated accidents that would be applicable to that condition, the following on-shift complement would be able to perform all required TMI SEP actions in a timely manner and that there are no identified collateral duties that would prevent the timely performance of emergency plan functions:

- One Shift Manager (CFH) [Certified Fuel Handler],
- One Shift Supervisor (CFH), and
- One Non-Certified Operator (NCO).

In Section 5.2.1, "Major Functional Area: Plant Operations and Assessment of Operational Aspects," of Attachment 1 to the letter dated March 19, 2018, the licensee stated, in part:

Plant operations shift staffing, as implemented previously, was based on a philosophy that provided defense-in-depth for an operating nuclear power plant. Because of the reduced number of possible events requiring mitigating actions and the limited number of actions to be performed by the Control Room positions for a permanently shutdown and defueled condition, the monitoring and control will be limited to the operation of spent fuel pool support systems.

Because of the reduced number of possible events requiring mitigating actions in the permanently defueled condition and the limited number of actions to be performed by the Control Room positions in a permanently defueled condition, the Shift Manager (CFH), Shift Supervisor (CFH) and NCO positions would provide the resources needed.

Because of the reduced number of possible events requiring mitigating actions in the permanently defueled condition and the limited number of actions to be performed by the Control Room positions in a permanently defueled condition, the NCO position would fulfill this task.

With the plant in a permanently shutdown and permanently defueled condition, the operations staff will only have to respond to events regarding loss of SFP cooling and/or water inventory or external events that could lead to a challenge to maintaining SFP cooling and/or water inventory. The Control Room continues to have indications, alarms, and controls for SFP parameters.

The licensee's post-shutdown OSA validated that in a permanently shutdown and defueled condition, with the postulated accidents that would be applicable to that condition, the following on-shift complement would be able to perform all required emergency plan actions in a timely manner and that there are no identified collateral duties that would prevent the timely performance of emergency plan functions: One (1) Shift Manager (CFH), One (1) Shift Supervisor (CFH), and One (1) Non-Certified Operator. As such, the licensee concluded that the proposed level of the on-shift staffing continues to meet the planning standards of 10 CFR 50.47(b), and the requirements of Appendix E to 10 CFR 50, commensurate with the reduced spectrum of credible accidents in the permanently defueled condition, and that TMI retains the ability to promptly implement the SFP mitigation actions.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown on-shift staffing. As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel, is reduced as compared to those at an operating plant. Based on this, the NRC staff determined the proposed level of onsite operations staffing will continue to provide for the direction and performance of actions to mitigate the remaining identified applicable events, and the prompt implementation of mitigating actions in response to an SFP accident.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in on-shift staffing for this functional area are acceptable and do not impact the ability of the on-shift staffing to perform the required plant operations and assessment of operational aspects functions.

3.2 Major Functional Area: Emergency Direction and Control

There are no changes to the on-shift performance of this function. The Shift Manager assumes the responsibility as the Shift Emergency Director and implements the emergency plan, and activates the ERO as appropriate.

For the augmented ERO, the Technical Support Center (TSC) will no longer perform State/local notifications and PAR decision making. These functions will be directly transferred to the Emergency Operations Facility (EOF), following the declaration of an Alert of greater Emergency Classification Level (ECL), under the control of the Corporate Emergency Director in the EOF.

Section 5.2.2, "Major Functional Area: Emergency Direction and Control," of Attachment 1 to the letter dated March 19, 2018, the licensee states, in part:

Both the Station and off-site ERO are 60-minute responders, and both facilities can assume command and control from the Shift Emergency Director. All non-delegable functions are still maintained with clear definition of responsibility.

Following the Command and Control turnover, the Corporate Emergency Director shall have overall Command and Control of the Emergency Response. Note that the Station Emergency Director takes responsibility for onsite Non-Delegable Responsibilities including Classification and Emergency Exposure Control. The Corporate Emergency Director takes responsibility for offsite Non-Delegable Responsibilities including Protective Action Recommendations and State/local Notifications.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown augmented staffing. As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel, is reduced as compared to those at an

operating nuclear power reactor plant. Based on this, the NRC staff determined the proposed level of onsite and augmented staffing will continue to provide for the emergency direction and control of actions to mitigate the remaining identified applicable events, and the prompt implementation of mitigating actions in response to an SFP accident.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in on-shift and augmented staffing for this functional area are acceptable and do not impact the ability of the on shift staffing to perform the emergency direction and control functions.

3.3 Major Functional Area: Notification/Communication

a. Major Task: Emergency Communications

Section E, "Notification Methods and Procedures," of the TMI Emergency Plan (EP-TM-1000) continues to reflect the same level of communications capabilities from its emergency facilities to perform timely communications with the required offsite agencies.

There are no proposed changes to the on-shift emergency communication function. The licensee provides that the TMI SEP currently identifies an on-shift staffing position as the Shift Communicator for performing the function of notification/communication. The on-shift notification can be performed by any qualified individual on-shift (e.g. NCO or maintenance personnel); however, this individual can have no other emergency plan function until relieved.

The licensee proposes to maintain the present communication protocol (i.e., the function would remain within the Control Room until the augmented staff, consisting of a TSC Emergency Notification System (ENS) Communicator and the EOF State/Local Communicator, relieves the on-shift communicator within 60 minutes of notification. The licensee provides that the post-shutdown OSA validated that in a permanently defueled condition, the shift communicator can perform this required emergency plan action in a timely manner and that there are no collateral duties identified that would prevent the timely performance of this emergency plan function.

Section IV.D.3 of Appendix E to 10 CFR 50 requires that "[a] licensee shall have the capability to notify responsible State and local government agencies within 15 minutes after declaration of an emergency classification." 10 CFR 50.72(a)(3) requires that the licensee notify the NRC immediately after notification of the appropriate State or local agencies and not later than 60 minutes after the time the licensee declares one of the emergency classes.

TMI uses the Nuclear Accident Reporting System (NARS), located in the Control Room, TSC, and the EOF, to support the State and local notification function. The NARS is a system of dedicated phone circuits independent of the normal landline phone system that utilizes an auto-ring feature. The NARS is used to transmit information to the Pennsylvania Emergency Management Agency and the five (5) Risk Counties (e.g. Dauphin, Cumberland, Lebanon, York, and Lancaster) for events classified as a Notification of Unusual Event (Unusual Event), Alert,

Site Area Emergency and General Emergency. This system is available on a 24-hour basis and incorporates all of the principal emergency response centers into a single, dedicated network.

The licensee provides that for purposes of the OSA, the NRC notifications were treated as a continuous action in accordance with 10 CFR 50.72(c)(3), meaning that once the initial NRC communications are established, it was assumed that the NRC will request an open line to be continuously maintained with the NRC Operations Center using the dedicated ENS network. The use of dedicated phone circuits and wireless headsets enables these notifications to be performed by the same on-shift communicator who performs the State notifications.

Section D, "Emergency Classification System," of the TMI Emergency Plan (EP-TM-1000) includes the following required actions at each ECL, as follows:

- Notification, within 15 minutes, of the state and local communities following initial emergency classification, classification escalation, and the issuance of or change to a PAR for the general public; and
- Notification of the NRC immediately after notification of the appropriate State and local agencies and not later than 60 minutes of classification.

For the augmented ERO, the following positions in the TSC will be eliminated:

- TSC Director,
- State/Local Communicator, and
- Health Physics Network (HPN) Communicator.

The following 60-minute Minimum Staff positions in the EOF will be designated as Full Augmentation positions and will be removed from the TMI SEP and be maintained and controlled in EPIPs:

- EOF Director, and
- HPN Communicator.

The ENS Communicator in the EOF is a Full-Augmentation position and will be removed from the TMI SEP and will be maintained and controlled in EPIPs.

The State and local emergency communication function is transferred from the on-shift communicator to the EOF State/Local Communicator. Currently the TSC provides a backup to the EOF in performing this emergency communication. The proposed change will remove this redundant capability, in that this emergency communication function will no longer be performed in the TSC. Since the proposed change has the State and local communication bypassing the TSC and being assumed by EOF, which is activated at an Alert or greater ECL concurrent with the TSC, the TSC State/Local Communicator can be eliminated.

Under the TMI SEP, the TSC Director responsibilities do not directly perform actions necessary to accomplish planning standard functions under NUREG-0654, but rather supports other personnel at the TSC, and therefore, can be eliminated. Essential tasks will be reassigned to other minimum staff personnel in the TSC.

The EOF Director position is being made a full augmentation position not required to activate the EOF. The function to prepare the State and Local Notification form will be relocated to the

EOF State/Local Communicator. The EOF Director position also supports the Corporate Emergency Director and oversees activities within the EOF. Responsibilities include supervision of EOF ERO positions and functions. All the EOF Director's essential responsibilities and tasks necessary to activate the facility will be re-assigned to other ERO positions. As such, the EOF Director position can be made a full augmentation position without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

The HPN Communicator is tasked with providing updates to the NRC on radiological concerns. With the source term maintained in the SFP, there is only one release path through the Auxiliary Building release path, reducing the scope of information related to a TMI event. Since all dose assessment and control of the field monitoring teams will be transferred to the EOF, the HPN communicator in the TSC can be eliminated.

The ENS Communicator in the TSC, which is a Minimum Staff position, will maintain primary responsibility for communications with the NRC via the ENS circuit, after relieving the Control Room. The full augmentation ENS Communicator in the EOF provides a backup function and can be removed from SEP, and will be maintained and controlled through EIPs without impacting the ability to maintain NRC emergency communications.

b. Major Tasks: Plant Status Communications

The licensee provides that there are no requirements for staffing this position. Plant status communications are currently provided by the Operations Communicators stationed in the Control Room and TSC. These positions are not minimum staff positions and are not required for activation of TSC. Due to the reduced scope of information required to respond to an issue related to the management of an event impacting the spent fuel pool, the dedicated staffing of the Operations Communicator positions is not required. The Operations Manager can obtain the required information directly from the Shift Manager or Shift Supervisor. All the Operations Communicator essential responsibilities and tasks will be re-assigned to other ERO positions.

c. Major Tasks: In-Plant Team Control Communications

The licensee provides that there are no requirements for staffing this position. In-plant repair communications is currently provided by the Damage Control Communicators stationed in the Control Room, OSC and TSC. These positions are not minimum staff positions and are not required for activation of the TSC. Due to the reduced scope of information required to respond to an issue related to the management of an event impacting the spent fuel pool, dedicated staffing of the Damage Control Communicators is not required. The function will be maintained with communication from the OSC Director to the TSC Maintenance Manager or TSC Operations Manager.

d. Major Tasks: Technical Activities Communication

The licensee provides that there are no requirements for staffing this position. This position is not a minimum staff position and is not required for activation of the TSC. The main function of the TSC Technical Communicator currently is to provide the EOF with updates on technical support activities and priorities. Due to the reduced scope of information required to respond to an issue related to the management of an event impacting the spent fuel pool, the dedicated staffing of the TSC Technical Communicators are not required. This function will be maintained by the TSC Technical Manager communicating to the EOF as necessary.

e. Major Tasks: Governmental Communications

The licensee provides that there are no requirements for staffing these positions and they do not perform support functions that are required for the activation of the EOF. The Regulatory Liaison, Emergency Operations Center (EOC) Communicator and State EOC Communicator in the EOF currently provide an interface between Exelon Nuclear personnel and governmental agencies reporting to the EOF. Exelon proposes to remove these three (3) EOF full augmentation positions from the SEP, and manage and control them in EPIPs.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown on-shift staffing, including changes to the augmented ERO. As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel is reduced, as compared to those at an operating plant. Because (1) of the reduced spectrum of activities, (2) no collateral duties were identified that would prevent the timely performance of this emergency plan function, and (3) the licensee continues to maintain the same level of communications equipment capabilities from its emergency facilities to perform timely communications with the required offsite agencies, the NRC staff concludes that in a permanently defueled condition, the designated on-shift staffing could perform this required TMI SEP action in a timely manner.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities; the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, and the requirements of Section IV.D of Appendix E to 10 CFR Part 50 and 10 CFR 50.72(a)(3) for having the capability to notify responsible Federal, State and local governmental agencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in ERO staffing for this functional area are acceptable and do not impact the ability to perform the required notification/communication functions.

3.4 Major Functional Area: Radiological Accident Assessment and Support of Operational Accident Assessment

The purpose of conducting accident assessment is to review radiological conditions using data from available instrumentation, assessing the impact of changing radiological conditions on emergency classification, assisting in accident assessments based upon those changing radiological conditions, and recommending appropriate offsite protective measures.

a. Major Tasks: Offsite Dose Assessment

Radiation Protection (RP) personnel are currently assigned as the on-shift Dose Assessor. The licensee proposes to designate on-shift dose assessment as a collateral duty, and assign this function to available qualified on-shift personnel. Section 5.2.4.a., "Off-site Dose Assessment," of Attachment 1 to Exelon's letter dated March 19, 2018, states:

The purpose of conducting the off-site dose assessment is to review radiological conditions using data from available instrumentation, assess the impact of

changing radiological conditions on emergency classification, assist in accident assessments based upon those changing radiological conditions, and recommend appropriate off-site protective measures. [...] The only path that will be required to be assessed is the Auxiliary Building Ventilation path in which the Spent Fuel Pool source term potentially could be discharged.

This function is currently performed by the on-shift staff (i.e., RP Technician) and augmented by EOF personnel within 60 minutes of notification. EOF personnel assume the off-site dose assessment function once the EOF is activated.

Radiation Protection Technicians and Shift Supervisors/CFHs will be trained to perform dose assessment on shift. [...] The use of the Shift Supervisor to support the on-shift dose assessment is appropriate for a permanently shutdown and defueled condition since many of the potential initiating conditions that would lead to an emergency declaration are no longer credible. The set of plant equipment involved in this condition is also greatly reduced, which also reduces the need for assessments and mitigation activities in the Control Room for an emergency.

Exelon will maintain the Dose Assessment Coordinator in the EOF as a 60-minute Minimum Staff responder, but proposes to eliminate the TSC Radiation Controls Coordinator position and to remove the EOF Dose Assessor position (which is a full augmentation position) from the TMI SEP and maintain and control in EIPs, since these are support positions not required for EOF activation.

The licensee provides that the dose assessment task is currently supported in the TSC by the Radiation Controls Coordinator and ultimately transferred to the Dose Assessment Coordinator in the EOF. The dose assessment function may directly transfer from on-shift to the EOF with no performance of these tasks in the TSC, based on the concurrent activation of the TSC and EOF at the declaration of an Alert or greater ECL. The TSC Radiation Protection Manager will assume any essential tasks conducted by the TSC Radiation Controls Coordinator; therefore, the licensee proposes that the TSC Radiation Controls Coordinator position be eliminated.

The EOF Dose Assessment Coordinator, which is a 60-minute Minimum Staff position, will relieve the on-shift dose assessor upon activation of the EOF. The EOF Dose Assessor is currently a full augmentation position, which is not required to support facility activation. All essential tasks necessary to support EOF activation performed by the EOF Dose Assessor will be assigned to the EOF Dose Assessment Coordinator. Therefore, the EOF Dose Assessor position is being removed from the SEP and will be managed and controlled in EIPs.

b. Major Tasks: Offsite Surveys

There are no requirements for on-shift staffing in support of this task.

The Augmented ERO currently has two (2) off-site field monitoring teams (FMTs), each team consisting of a lead and a driver. These positions are currently 60-minute responders, staffed by station personnel, and report to the EOF Environmental Coordinator, who is also currently a minimum staff 60-minute responder. In addition, the licensee currently staffs an EOF Field Team Communicator, which is a full augmentation position but not required for EOF activation.

The licensee proposes to designate one of the two (2) offsite FMTs as 90-minute responders. The EOF Environmental Coordinator position is also being made a full augmentation position and is not required to assume responsibility for the field monitoring teams. As full augmentation positions in the EOF, the Environmental Coordinator and the Field Team Communicator positions are being removed from the SEP and will be managed and controlled in EPIPs.

The licensee provides that the proposed change will designate one of the FMTs as 90-minute responders. An additional 30 minutes in augmentation response time is acceptable in that this 2nd FMT is a backup to the 1st FMT, while both FMTs are expected to respond to an event to better coordinate radioactive plume tracking action(s). Allowing for an additional 30 minutes provides some flexibility in staffing this ERO function commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility.

The tasks for managing the FMTs are to be transferred to the EOF Dose Assessment Coordinator. The remaining essential tasks performed by the Environmental Coordinator will be transferred to the EOF Radiation Protection Manager, and the Environmental Coordinator will be designated as a full augmentation position not required to support the activation of the EOF.

The EOF Field Team Communicator is currently a full augmentation position not required to activate the EOF. The essential tasks necessary to control the Field Monitoring Teams have been transferred to the EOF Dose Assessment Coordinator. Both the EOF Environmental Coordinator and the EOF Field Monitoring Communicator positions are being removed from the SEP and will be managed and controlled in EPIPs.

c. Major Tasks: Onsite Surveys

There are no requirements for on-shift staffing in support of this task.

TMI proposes to reduce the on-site FMT composition from two (2) to one (1) individual by eliminating the vehicle driver. Due to the configuration and size of the site within and around the Protected Area, and the limited available roads in that area, a vehicle would not be needed to traverse the site to effectively perform onsite surveys.

d. Major Tasks: In-Plant Surveys

There are no changes proposed for this on-shift function, and there are no tasks for the Augmented ERO.

e. Major Tasks: Chemistry

The licensee proposes to maintain the chemistry sampling and analysis function on-shift as a collateral duty, performed by an individual on-shift who has been qualified to perform this function.

The licensee provides that it will either maintain a Chemistry Technician on shift or qualify an existing on-shift person to perform sampling and analysis at various locations throughout the plant. If a Chemistry Technician is placed on-shift, the Chemistry Technician may be assigned other collateral duties (e.g., Fire Brigade). After shutdown, it may be feasible to utilize a cross-qualified RP Technician to satisfy the chemistry function.

The licensee provides that initial training requirements for the designated on-shift person will include all training modules to ensure they are equipped with the required skills and knowledge to perform the required liquid sampling and analysis. These training modules will be specifically identified in their training program description for the designated on-shift position. Specific knowledge requirements would include how to obtain specific liquid samples.

The licensee provides that for gaseous releases, the only credible scenario would be to mechanically damage spent fuel during handling or by impact of a heavy object. Plant activities that could potentially cause mechanical damage (i.e., fuel moves in the SFP) will require that the radiation monitor as listed in the gaseous effluent emergency action levels (EALs) be in service or that an individual qualified to perform the chemistry sampling and analysis function will be onsite, thereby alleviating a potential delay in sample analysis to determine EAL applicability. Applicable fuel handling procedures will be revised to incorporate this as a prerequisite prior to fuel handling activities. A commitment is contained in Reference 1, Attachment 5. Additionally, no chemistry job tasks were noted as being required within the first 90 minutes of any of the analyzed events.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown on-shift staffing, which provided that there were not any chemistry job tasks required within the first 90 minutes of any of the analyzed events. There is a commitment to revise applicable fuel handling procedures to require that an individual qualified to perform the chemistry sampling and analysis function be on site, or the radiation monitor listed in the Abnormal Rad Levels/Radiological Effluents EALs is in service, as a prerequisite to handling or moving spent fuel.

For the Augmented ERO, the licensee proposes to eliminate the OSC Chemistry Pool position. The need to perform complex chemistry sampling is greatly reduced with the permanent cessation of operation of the reactor and the source term confined to the spent fuel pool. The on-shift staffing will be adequate to perform sampling of the spent fuel pool, and as such, there is no need to dispatch an OSC pool position to support sampling. However, if conditions warrant, Chemistry personnel are available to be called in by the OSC Director.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown on-shift staffing, which provided that there were not any chemistry job tasks required for any of the analyzed events. As the licensee stated previously, one of the purposes of the chemistry sampling and analysis function is to collect and analyze gaseous and liquid samples if the applicable radiation monitor is not available during a release, or as directed by the Shift Manager. The function will now be performed by either a Chemistry Technician or an individual trained in the function. As such, utilizing a trained individual performing the function as a collateral duty does not impact the ability of the on-shift or ERO staff to perform the Major Functional Area of Radiological Accident Assessment and Support of Operational Accident Assessment.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of the on-shift and augmented staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in ERO staffing for this major functional area are acceptable and do not impact the ability to perform the required radiological accident assessment and support of operational accident assessment functions.

3.5 Major Functional Area: Plant System Engineering, Repair and Corrective Action

a. Major Task: Technical Support

The licensee proposes to eliminate the STA/Incident Advisor position from the on-shift staffing. The permanent cessation of power operations and removal of fuel from the reactor vessel no longer makes the position necessary for technical and analytical assistance for plant operational concerns during abnormal and emergency situations, analysis of events and their effects, or the on-shift core/thermal hydraulics function of the emergency plan.

In Section 5.2.5, "Major Functional Area: Plant System Engineering, Repair and Corrective Actions," of Attachment 1 to its letter dated March 19, 2018, the licensee stated, in part:

The emergency planning function of the STA/Incident Assessor (IA) is to perform assessments of plant operating concerns, technical support, appropriate corrective actions, analysis of events and their effects, effectiveness of response(s) to emergent conditions, classifications of emergencies, protection of the public, and any other actions related to critical safety functions and plant safety during abnormal and emergency situations. The STA/IA also contributes to operations during normal plant conditions. By routine monitoring of equipment and plant operations, the STA/IA can focus on preventative actions in order to mitigate the consequences of an accident. Additionally, the STA/IA provides the core/thermal hydraulics function of the emergency plan for the confirmation of adequacy of core cooling, maintenance of coolable core geometry, and to verify that actual plant response to the event is as expected until relieved by the TSC Core Thermal Hydraulic Engineer within 60 minutes of notification.

Because of the permanent cessation of operations and removal of fuel from the reactor vessel, TMI proposes to eliminate the STA/IA position from the emergency plan, since this condition no longer makes the position necessary for technical and analytical assistance for plant operational concerns during abnormal and emergency situations, analysis of events and their effects, or the on-shift core/thermal hydraulics function of the emergency plan, as described previously.

The on-shift technical support function for the remaining accident scenarios associated with the storage of spent fuel will be assumed by the Control Room personnel.

The Shift Manager/CFH or Shift Supervisor/CFH will maintain the capability to perform the function of on-shift technical analysis for the limited applicable accident scenarios associated with the storage of spent fuel.

For the Augmented ERO, the licensee proposes to eliminate the following positions:

- Core/Thermal Hydraulics Engineer,
- Mechanical Engineer,
- Electrical Engineer,
- Radiation Controls Engineer,

- SAMG Decision Maker (Collateral Duty), and
- Two (2) SAMG Evaluators (Collateral Duty).

The licensee provides that the Engineering function will continue to be maintained by TSC Technical Manager, who is a TMI staff engineer. The TSC Technical Manager will be qualified to provide engineering support in response to a FHA or an event resulting in damage to the SFP integrity, or the loss of SFP cooling or inventory, and will also evaluate plant parameters during an emergency to determine the overall plant condition. The licensee further provides, in part:

Elimination of the TSC Core Thermal/Hydraulic Engineer position will have no effect on emergency response in a permanently defueled condition because the position does not assess the condition of fuel in the SFP during an emergency. [...] This position can be eliminated without increasing the risk to public health and safety because the major task of evaluating core/thermal hydraulics is not necessary in a permanently shutdown and defueled condition. A review of major tasks of the Core/Thermal Hydraulics Engineer is provided in Attachment 4 [Emergency Response Organization Task Analysis], and no essential tasks were identified to support Emergency Planning Functions.

The assessment and disposition of specific responsibilities and tasks for the TSC Engineers is addressed in Attachment 4 of this submittal. It is concluded that all the TSC Engineers' responsibilities and tasks can either be eliminated or re-assigned to other ERO positions. As such, the TSC Electrical and Mechanical Engineer position can be eliminated without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

The Radiation Controls Engineer (RCE) in the TSC is being eliminated. This position is tasked with coordinating the radiological and chemistry interface between the technical support engineering efforts. A review of major tasks of the RCE is provided in Attachment 4, and the TSC Radiation Protection Manager will assume any essential tasks conducted by the RCE.

The SAMG Decision Maker and the two (2) SAMG evaluators in the TSC are being eliminated. The implementation of the Severe Accident Management Guidelines (SAMGs) do not support the Emergency Plan Planning Functions, but provide beyond design basis evaluations for plant recovery. In the permanently shutdown and defueled condition, the need to implement SAMGs will no longer be required.

The licensee provides that the proposed change to the level of augmented ERO staffing continues to meet the planning standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR 50, commensurate with the reduced spectrum of credible accidents in the permanently defueled condition, and ensures that the TMI facility retains the ability to promptly implement the SFP mitigation actions.

b. Major Task: Repair and Corrective Actions

There are no proposed changes to on-shift staffing for this function, which currently consists of one (1) OSC Director/Repair Team Lead in the OSC, one (1) Mechanical Maintenance in the OSC, and one (1) Electrical Maintenance/I&C in the OSC.

The licensee proposes to eliminate one (1) I&C Maintenance Technician, as a minimum staff 90-minute responder, and the Assistant OSC Director, Operations Lead and Support Personnel, which are currently full augmentation 60- minute responder positions. The licensee proposes to only maintain the OSC Director position and a pool of one (1) Mechanical Maintenance Technician and one (1) Electrical Maintenance Technician to support repair and corrective actions. Since in the permanently shutdown and defueled condition there is no longer any complex automatic control systems in service, the need for dedicated I&C maintenance technicians are not required. If conditions warrant, the OSC Director can call out I&C support as necessary.

In Section 5.2.5.b, "Major Task: Repair and Corrective Actions," of Attachment 1 to its letter dated March 19, 2018, the licensee stated, in part:

The primary events of concern in the immediate post-shutdown and defueled condition will be a fuel handling accident and a loss of SFP cooling and/or water inventory. Events involving a loss of SFP cooling and/or water inventory can be addressed by implementation of the SFP inventory makeup strategies, as required under License Condition 2.c.(17), "Mitigation Strategy License Condition" and 10 CFR 50.54(hh)(2). OSC staff is not relied upon to implement SFP inventory makeup. As such, elimination of the I&C Maintenance Technician, Assistant OSC Director, Operations Lead positions do not impact the ability of the ERO to perform the required function based on the permanent shutdown and defueled condition of the facility.

The licensee provides that the proposed change to the level of ERO staffing continues to meet the planning standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently defueled condition, and ensures that the TMI facility retains the ability to promptly implement SFP mitigation actions.

c. Major Task: Accident Analysis

There are no requirements for on-shift staffing in support of this task.

The licensee proposes to remove the current full augmentation positions of EOF Operations Advisor, EOF Technical Support Manager, and EOF Technical Advisor from the TMI SEP to be controlled and managed in EIPs. The licensee also proposes to eliminate the EOF Operations Assistant, which is currently a full augmentation position in support of an emergency declaration at the TMI site.

In Section 5.2.5.c, "Major Task: Accident Analysis," of Attachment 1 to its letter dated November 20, 2018, the licensee stated, in part:

The Operations Assistant in the EOF provides is staffed with TMI station personnel with an operations background familiar with the TMI Emergency Operating Procedures [EOPs] and provide support to the EOF Operations Advisor and EOF Tech Support Manager. With permanent cessation of plant operations all EOPs will no longer be applicable, and implementation of the Permanently Shutdown Emergency plan will only deal with events related to storage of irradiated fuel in the Spent Fuel Pool. Therefore, the Operations

Assistant position in the EOF can be eliminated without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

The licensee performed a review of the major functions performed by the EOF Technical Support Manager, and proposes to assign the Corporate Emergency Director the function of providing information to the State/Local Communicator for completing the State/local notification form. The licensee concluded that the EOF Technical Support Manager no longer would perform essential tasks required for support of an emergency planning function. Therefore, the EOF Technical Support Manager can be relocated to a full augmentation position and be maintained and controlled in EIPs without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

The EOF Technical Advisor provides support to other positions in the EOF and performs no essential tasks required for support of an emergency planning function. Therefore, this full augmentation position can be removed from the TMI SEP and maintained and controlled in EIPs without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of the staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in staffing for the positions discussed above for this functional area are acceptable and do not impact the ability to perform the required plant system engineering, repair and corrective action functions.

3.6 Major Functional Area: Protective Actions (In-Plant)

The functional area is intended to provide radiation protection oversight of the complement of personnel for damage repair, corrective actions, search and rescue, first aid, firefighting, and personnel monitoring. TMI SEP currently has assigned two (2) on-shift RP Technicians with four (4) additional RP personnel augmenting the on-shift RP Technicians. The licensee indicated that there are no proposed changes to on-shift RP personnel, but proposes to eliminate three (3) of the four (4) augmented RP personnel. Therefore, once the ERO is activated, the two (2) on-shift RP technicians will join the augmented RP personnel providing three (3) RP personnel to support station emergency plan activities.

In Section 5.2.6, "Major Functional Area: Protective Actions (In-Plant)," of Attachment 1 to its letter dated March 19, 2018, the licensee stated, in part, that:

In the past, radiological access control was a labor-intensive task. Dedicated RP Technicians were required to check dose margins, training qualifications, and to ensure that workers had read and understood their radiation work permit. The radiological staffing in the current TMI SEP still reflects this labor intensive radiological access control and monitoring process. However, worker access control is now automated because RP work processes have been computerized. Radiation work permit access control and electronic dosimeter computer systems work together to provide a fully

integrated system, allowing workers to sign-in on their radiation work permit and to self-issue electronic dosimeters. The electronic dosimeter provides the worker with a continuous status of dose received and work area dose rates, and will alarm at preset dose and dose rate alarms.

Access control is maintained because the worker must obtain an electronic dosimeter and enter a radiation work permit number into the access control computer system, prior to being allowed access into the Radiologically Controlled Area (RCA). Additionally, personnel are required and trained to self-monitor for radioactive contamination whenever they exit the RCA. [...] TMI relies on the availability of computer systems, electronic dosimeters, and enhanced processes to relieve RP Technicians of access control, personnel monitoring and dosimetry tasks; thereby, freeing the RP Technician to cover any vital response activities.

For a permanently shutdown and defueled condition, the evaluated Design Basis Accidents are limited to Spent Fuel Pool area. Because entry is expected to be limited to those areas where maintenance necessary to maintain SFP cooling is required and the areas potentially affected by an accident involving the SFP are limited, there is a significant decrease in the areas potentially requiring RP coverage in a permanently shutdown and defueled condition. Multiple repair teams can be covered by the on-shift Radiation Protection personnel.

As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel is reduced, as compared to those at an operating plant. The NRC staff reviewed the licensee's analysis of proposed post-shutdown staffing. Because the designated two (2) on-shift RP Technicians staffing can perform the required TMI SEP actions for multiple teams in a timely manner, the NRC staff concludes that the level of RP staffing will continue to provide for support of radiation protection oversight of the complement of personnel for damage repair, corrective actions, search and rescue, first aid, firefighting and personnel monitoring required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of the staffing continues to meet the planning standards 10 CFR 50.47(b)(1) and(2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in staffing for the positions discussed above for this functional area are acceptable and do not impact the ability of the on-shift staffing to perform the required protective actions (in-plant) function.

3.7 Major Functional Areas: Fire Fighting

The TMI Fire Brigade complement currently consists of six (6) persons, trained in accordance with Exelon's Nuclear Fire Protection Program, and consisting of one (1) Fire Brigade Leader and four (4) Fire Brigade team members. TMI also currently includes a licensed operator as the 6th member to provide oversight and operational insight. The licensee is proposing to revise the TMI SEP to reflect that the Fire Brigade will be staffed per the TMI Fire Protection Program.

In Section 5.2.7 of Attachment 1 to the March 19, 2018, letter, the licensee stated, in part:

[...] Upon a successful evaluation and approval of an incipient Fire Brigade in accordance with 10 CFR 50.48(f), the Fire Brigade compliment will be reduced to three (3). This is anticipated to occur sometime following shutdown. Until the 50.48(f) Fire Brigade evaluation is completed, the Fire Brigade will consist of five (5) persons. Minimum Staffing Table TMI B-1 Note (e) is revised to reflect this statement. The requirement for a licensed operator (Nuclear Station Operator - NSO) to provide oversight of the fire brigade will be eliminated.

The proposed change will require that the fire brigade be maintained per the Station's Fire Protection Plan, which serves as the controlling document. With the cessation of operation, the NLO position is replaced with the NCO position. The Station's Fire Protection Plan will define qualification requirements for fire brigade members.

The fire brigade is in addition to the Operations minimum staff, and do not include members of the minimum shift crew required for other essential functions during a fire emergency. The fire brigade team will be able to support the Shift Manager in Repair and Corrective Action activities when not engaged in performing firefighting duties, and are credited with performing mitigation strategies required by 10 CFR 50.54(hh) and FLEX strategies for the SFP. When the incipient fire brigade staffing is implemented it will remain adequate to support mitigating and FLEX strategy actions. Therefore, the fire brigade will be capable of providing adequate firefighting capabilities to support plant activities in the permanent shutdown and defueled conditions.

The proposed change to the level of on-shift staffing to support the fire-fighting major functional area continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently defueled condition, and ensures that TMI retains the ability to promptly implement SFP mitigation actions.

3.8 Major Functional Area: First Aid and Rescue Operations

There are no proposed changes for this function, as it applies to on-shift staffing. The TMI SEP will continue to staff this function as a collateral duty.

3.9 Major Functional Area: Site Access Control and Personnel Accountability

There are no proposed changes for this function, as it applies to on-shift staffing. The TMI SEP will continue to staff this on-shift function as a collateral duty.

The Security Coordinator is currently a full augmentation position in the TSC and EOF, and is staffed by TMI Security Personnel in the TSC and by Corporate personnel in the EOF. The licensee proposes that the TSC Security Coordinator will be designated as a Minimum Staff, 60-minute responder. The EOF Security Coordinator provides backup to the TSC Security Coordinator and only performs support functions and is not required to support activation of the EOF. As such, the EOF Security Coordinator position will be removed from the TMI SEP and managed and controlled in EIPs as a full augmentation position.

The licensee states in Section 5.2.9.a, "Major Task: Security & Accountability," of Attachment 1 to the March 19, 2018 letter, in part, that implementation of these changes do not impact the overall effectiveness to perform the necessary emergency planning functions and will not cause undue impact to the performance of the TMI SEP.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of the staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in staffing for the positions listed above for this functional area are acceptable and do not impact the ability to perform the required site access control and personnel accountability.

3.10 Major Functional Area: Resources Allocation and Administration

There are no requirements for staffing this position for on-shift staffing.

The current TMI Table B-1 identifies the following augmented ERO positions to support the Logistics / Administration function:

- EOF Logistics Manager,
- TSC Logistics Coordinator, and
- EOF Events Recorder, EOF Computer Specialist, and TSC, OSC and EOF Clerical Staff, as needed.

The licensee states that these positions as currently defined in the TMI SEP would not be considered as part of the minimum ERO needed to implement the emergency plan (i.e., if any position or function is not staffed then the emergency plan may not be effectively implemented). Therefore, the licensee is proposing the following changes to ERO augmented staffing:

- The EOF Computer Specialist position will be staffed as a Minimum Staff position with a 90-minute response time. However, this position will not be required to activate the EOF.

This position is intended to provide support to Federal and State officials with the implementation of the EOF's technological assets. Having a computer specialist in the EOF will provide support, as needed, to ensure that the computer / telephone assets function adequately to support emergency planning functions, but is not required to activate the EOF.

- The EOF Logistics Manager, which is currently a 60-minute Minimum Staff position, will be designated as Full Augmentation.

Under the TMI SEP, the responsibilities for this position are not directly required to accomplish emergency planning function, but rather to support other personnel at the TSC and EOF. Therefore, the EOF Logistics Manager position can be maintained and controlled in EIPs without impacting TMI's ability to respond to

the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

- The TSC Logistics Coordinator position will be eliminated.

The TSC Logistics Coordinator does not perform any essential tasks required to support emergency planning functions, and therefore, can be eliminated without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor. The licensee proposes to transfer all logistic functions to the EOF logistics positions, which will be managed and controlled in EIPs.

- The following full augmentation positions: EOF Events Recorder, EOF Administrative Coordinator, and Clerical Staff in the TSC, OSC and EOF, will be removed from the SEP and will be managed and controlled by EIPs.

The tasks of these positions are not required for any essential task required for support of emergency planning functions. Therefore, they can be removed from the SEP and managed and controlled by EIPs without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of the staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in staffing for the positions listed above for this functional area are acceptable and do not impact the ability to perform the required resources allocation and administration functions.

3.11 Major Functional Area: Public Information

a. Major Task: Media Interface

There are no on-shift requirements for staffing this position.

For the Augmented ERO, the current TMI SEP identifies the Corporate Spokesperson as Minimum Staff, responding to the Joint Information Center (JIC), but not subject to the 60-minute response time requirement from the declaration of an Alert, or greater ECL. In addition, the News Writer is currently identified as full augmentation positions in the JIC.

The licensee is proposing that the Corporate Spokesperson will now be required to respond at 90-minutes from the declaration of an Alert, or greater ECL. The activation of the JIC Organization at the Alert classification allows for the organization to be staffed at an earlier classification level than recommended by industry guidance. The two (2) full augmentation positions (Rad Protection Spokesperson and Technical Spokesperson) will be removed from the TMI SEP and will be managed and controlled in EIPs, with any essential tasks for these two positions being assigned to the Corporate Spokesperson. The licensee provides in

Section 5.2.11, "Major Task: Media Interface," of Attachment 1 to the March 19, 2018 letter, that these proposed changes have been reviewed and determined that they would not impact TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

b. Major Task: Information Development

There are no on-shift requirements for staffing this position.

For the Augmented ERO, the TMI SEP currently identifies the Public Information Director as Minimum Staff, responding to the JIC, but not subject to the 60-minute response time requirement from the declaration of an Alert or greater ECL. The News Writer position in the JIC is currently a full augmentation position.

The licensee is proposing that the Public Information Director will now be required to respond at 90-minutes from the declaration of an Alert, or greater ECL, and in coordination with the Corporate Emergency Director in the EOF will continue to prepare and release utility information regarding the emergency event. The Exelon Communications Department will provide for the media interface tasks upon initial declaration of an ECL and provide for the JIC functions until the JIC is activated and turnover responsibilities occur.

The licensee is also proposing that the JIC News Writer, as a Full Augmentation position, be removed from the SEP and managed and controlled in EIPs. The licensee's assessment of specific responsibilities and tasks for the JIC News Writer concluded that all the JIC News Writer's essential responsibilities and tasks can be reassigned to the JIC Public Information Director without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

c. Major Task: Monitoring and Rumor Control

There are no on-shift requirements for staffing this position.

The TMI SEP currently identifies the Media Monitoring and Rumor Control Staff as full augmentation positions that are filled on an "as needed" basis. The Exelon Communications Department will provide for the media interface tasks upon initial ECL declaration and will provide for the JIC functions until the JIC is activated and turnover of responsibilities occurs.

Per the licensee's letter dated August 13, 2018, the Media Monitoring and Rumor Control Staff would be removed from the TMI SEP and would be managed and controlled in EIPs. The licensee's assessment of specific responsibilities and tasks concluded that the Media Monitoring and Rumor Control Staff can be managed and controlled in EIPs without impacting TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

d. Major Tasks: Facility Operation and Control

There are no on-shift requirements for staffing this position.

For the Augmented ERO, the current TMI SEP identifies the JIC Director as Minimum Staff, responding to the Joint Information Center (JIC), but not subject to the 60-minute response time

requirement from the declaration of an Alert, or greater ECL. In addition, the following are currently identified as full augmentation positions in the JIC:

- JIC Coordinator,
- JIC Administrative Coordinator,
- JIC Events Recorder, and
- JIC Clerical Support, and JIC Access Control.

The licensee is proposing that the JIC Director will now be required to respond at 90-minutes from the declaration of an Alert, or greater ECL, and that all the full augmentation positions to support Facility Operation and Control would be removed from the TMI SEP and would be managed and controlled by EIPs. The licensee's assessment of specific responsibilities and tasks concluded that these proposed changes have been reviewed and determined that they would not impact TMI's ability to respond to the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of the staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in staffing for the positions listed above for this functional area are acceptable and do not impact the ability to perform the required JIC functions.

3.12 Licensee On-Shift and Augmented ERO Changes

The proposed changes would revise the TMI SEP ERO staffing to support planned permanent cessation of operations and permanent defueling of the TMI Unit 1 reactor. Specifically, the proposed changes would eliminate the ERO positions not needed for the safe storage of spent fuel in the spent fuel pool during the initial decommissioning period and eliminate ERO positions not necessary to effectively respond to the reduced spectrum of credible accidents for a permanently shutdown and defueled power reactor facility. In addition, the proposed changes also relocate full augmentation positions from the TMI SEP to be maintained and controlled in the EIPs.

In Section 5.3.2. "Augmented ERO Staff," of Attachment 1 to the letter dated March 19, 2018, the licensee stated, in part, that:

In the permanently defueled condition, TMI will maintain multiple ERO teams, with one complete team being on duty at any given time. When the Shift Manager/CFH directs the activation of the ERO call out system, all ERO members on all teams are notified and are directed to respond to ensure adequate coverage of all ERO positions at all ERFs.

TMI requires members to act promptly in reporting to their assigned ERF, even when not on duty. During duty periods, the procedure further requires that team members respond within the committed response time and that they remain fit for

duty throughout their duty assignment. Individuals are trained to respond directly to their ERF even if they are not on duty. Excess personnel that respond may be assigned support responsibilities or be designated as a relief shift. This conservative policy ensures timely activation since some off-duty personnel may respond sooner than the on-duty personnel. The proposed revisions to the Emergency Plan will not change these requirements. It will continue to be a management expectation that all qualified individuals for each position respond and report to their respective ERF as quickly as possible. EP procedures identify ERO positions assigned to each facility and the minimum staffing required before each facility can be declared operational and is available to perform its designed functions.

The TMI Emergency Plan (EP-TM-1000) identifies Minimum Staff as those ERO members needed to support facility activation. A facility is activated only after it reaches minimum staff and is available to perform its designed functions.

Additionally, in Section 5.5, "Validation and Training," of Attachment 1 to the letter dated March 19, 2018, the licensee stated, in part, that:

To validate the results of the analysis, a drill will be developed and conducted prior to implementation of the changes described within this LAR. The drill will be conducted to confirm the ability of the post-shutdown ERO to perform the necessary functions of each ERF. The drill will evaluate and validate the ability to accomplish the stated mission of each ERF, and ensure that the planning standard functions are preserved with no degradation in time sensitive activities or in the ability to communicate with offsite response organizations. The drill will also validate that the post-shutdown ERO continues to address the risks to public health and safety and comply with the TMI Emergency Plan, site commitments, and applicable regulations. Implementing procedures will be revised to address the permanently shutdown and defueled conditions. The revised procedures will be used to support training of the ERO staff and the conduct of drills described above.

Training and procedures will be developed and in place prior to performing the post shutdown ERO drill. The drill scenario will include SFP events and will be designed to test the major elements of the TMI post shutdown Emergency Plan. Major elements to be tested will include communications and coordination with offsite response organizations, including the JIC. State, Local and Federal response organizations will be provided the opportunity to participate in or observe the drills.

In addition, other training drills will be conducted to train post-shutdown station ERO members. These drills may not involve all Exelon ERFs or State/local participation; however, all ERO members will participate in at least one training drill. The post shutdown [emergency preparedness] procedures which support the defueled condition will be available in draft form to support the drills. Final implementation of the procedures will occur concurrent with implementation of the post shutdown emergency plan.

The elimination of minimum staffing positions is summarized below, in addition to other requested changes to the TMI ERO.

3.12.1 On-Shift / Control Room Staffing

As described in Section H, “Emergency Facilities and Equipment,” of the TMI Emergency Plan, the Control Room is the centralized on- site location from which TMI’s plant systems necessary to support the spent fuel pool operation are controlled. Control Room personnel must evaluate and effect control over the emergency and initiate activities necessary for coping with the emergency until such time that the augmenting ERO can be mobilized and the emergency response facilities activated.

To support ERO staffing changes following permanent cessation of operations and permanent removal of fuel from the reactor vessel, the Post-Shutdown On-shift Staffing Assessment was evaluated in conjunction with the postulated accidents previously evaluated using NEI 10-05 methodology. A summary of the assessment and remaining applicable DBAs considered is provided in Section 3.0.

The Post-Shutdown On-Shift Staffing Assessment results validated the following changes to the TMI on-shift staff:

Current On-Shift Staffing	Post-Shutdown On-Shift Staffing
Shift Manager	Shift Manager / CFH
Control Room Supervisor	Shift Supervisor / CFH
Two (2) Control Room Operators	One (1) NCO
Shift Technical Advisor / Incident Assessor	<i>Position Eliminated</i>
Two (2) Auxiliary Operators	<i>Position Eliminated</i>
EP Communicator	EP Communicator
Two (2) RP Technicians	Two (2) RP Technicians
Chemistry Technician	<i>Position Eliminated</i>
Fire Brigade (per the TMI Fire Plan)	Fire Brigade (per the TMI Fire Protection Plan)

In addition, the functional analysis performed in Section 5.2 to Attachment 1 of the licensee’s letter dated March 19, 2018, concluded that the proposed on-shift staffing changes do not impact the capabilities of the on-shift staff to respond to an emergency and will continue to comply with the TMI SEP, site commitments and regulations.

The NRC staff reviewed the licensee’s analysis of proposed post-shutdown on-shift staffing. As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel, is reduced as compared to those at an operating plant. Based on this, the NRC staff determined the proposed level of staffing will continue to provide for the direction and performance of actions to mitigate the remaining identified applicable events, and the prompt implementation of mitigating actions in response to an SFP accident.

Based on the NRC staff’s review of the information provided in Exelon’s application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response

capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with radiological emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in on-shift staffing for this functional area are acceptable and do not impact the ability of the on-shift staffing to perform the required plant operations and assessment of operational aspects functions.

3.12.2 Operations Support Center

As described in Section H of the TMI Emergency Plan, the OSC is the onsite location where station support personnel report during an emergency and from which they will be dispatched for assignments or tasks in support of emergency operations. The proposed changes to the TMI SEP do not involve any physical modifications to, or layout/configuration changes to the OSC. The OSC is located on the 305' Elevation of the Service Building.

In the permanently shutdown and defueled condition, the primary functions of the OSC will remain dispatching of, and accounting for, Repair and Corrective Action Teams. The OSC Director is responsible for ensuring adequate staffing of the OSC supporting the emergency; working with the TSC through the Maintenance Manager and Operations Manager to set priorities for the OSC; and directing the activities of the OSC to support the emergency response.

The licensee stated that the proposed staffing to the OSC Minimum Staff do not impact the ability to respond to issues related to maintaining spent fuel in the spent fuel pool. Appropriate repair and corrective action capability is provided by the OSC Minimum Staff.

The following table illustrates the NRC staff's summary of the proposed changes to the TSC staffing in the post shutdown emergency plan:

TMI OSC Minimum Staff Positions	
Current Minimum Staff Positions	Proposed Minimum Staff Positions (response times are 60 minutes unless otherwise noted)
OSC Director	OSC Director
RP Personnel #1	RP Personnel #1
RP Personnel #2	<i>Position Eliminated</i>
RP Personnel #3	<i>Position Eliminated</i>
RP Personnel #4	<i>Position Eliminated</i>
Mechanical Maintenance	Mechanical Maintenance
Electrical Maintenance / I&C #1	Electrical Maintenance
Electrical Maintenance / I&C #2	<i>Position Eliminated</i>
TMI OSC Augmented Staff Positions	
Current Positions	Proposed Positions
OSC Damage Control Communicator	<i>Position Eliminated</i>
Assistant OSC Director	<i>Position Eliminated</i>
Operations Lead & Support Personnel	<i>Position Eliminated</i>

In Section 5.3.4, "Operations Support Center (OSC)," of Attachment 1 to the letter dated March 19, 2018, the licensee provided, in part:

The functional analysis in Section 5.2 provided justification for the elimination of key OSC Minimum Staffing Positions. ERO tasks have been reviewed and tasks for eliminated positions will be transferred appropriately. The analysis of the ERO staff tasks assigned by the Emergency Plan is found in Attachment 4 of this submittal. The Attachment evaluates and dispositions each EP task as being reassigned or eliminated and provides justification, as appropriate. It is ascertained from the Attachment 4 assessment, that given the elimination of credible accidents involving an operating reactor, the proposed ERO Minimum Staff can continue to satisfactorily perform their existing Emergency Plan responsibilities as well as any transferred responsibilities.

As discussed in the Functional Analysis of Section 5.2, TMI proposes to remove all the OSC Non-Minimum Augmented Staff, following permanent shutdown. TMI proposes to only maintain the OSC Director position and a pool of one (1) Mechanical Maintenance Technician, one (1) Electrical Maintenance Technician, and three (3) RP Personnel. The OSC Director will report to the Maintenance Manager in the TSC. If at any time the OSC Director determines that additional support is necessary to accomplish the mission of the OSC, the OSC Director will contact the EOF to arrange for support by calling out additional personnel.

TMI ERO staffing, as required by the TMI Emergency Plan, is intended to address the risks to public health and safety inherent in an operating reactor. The risk in the permanently shutdown and defueled condition is significantly reduced. Many of the potential initiating conditions that would lead to an emergency declaration will no longer be credible. The set of plant equipment required in the permanently shutdown and defueled condition is also greatly reduced, which reduces the assessments and mitigation activities that the OSC must perform. The spectrum of credible accidents and operational events, and the quantity and complexity of activities required for safe storage of spent fuel is reduced, as compared to an operating power reactor. Restoration of equipment supporting spent fuel cooling and inventory will be the primary focus of emergency mitigation actions for the TSC/OSC in a permanently shutdown and defueled condition. The proposed staffing can respond to the expected repair activities with adequate Radiation Protection oversight.

The primary events of concern in the immediate post-shutdown and defueled condition will be a fuel handling accident and a loss of SFP cooling and/or water inventory. During fuel handling activities, station procedures require additional personnel (i.e., RP Techs) on-site that will, if a fuel handling accident were to occur, be able to respond to the event. Events involving a loss of SFP cooling and/or water inventory can be addressed by implementation of the SFP inventory makeup strategies, as required under License Condition 2.c.(17), "Mitigation Strategy License Condition" and 10 CFR 50.54(hh)(2). OSC staff is not relied upon to implement SFP inventory makeup.

The proposed change to the level of ERO staffing continues to meet the planning standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the

permanently defueled condition, and ensures that TMI retains the ability to promptly implement SFP mitigation actions.

The NRC staff reviewed the licensee's analysis of proposed ERO staffing for the permanently shutdown and defueled condition, and considered the postulated accidents that would be applicable to that condition. As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel is reduced, as compared to those at an operating plant. The duties being reassigned can be adequately performed by the remaining ERO staff in the OSC and the assumption of duties previously done by eliminated positions will not affect the capability of the remaining ERO positions or the OSC to perform their designated functions with respect to the reduced spectrum of accidents. Therefore, the NRC staff concludes that the proposed level of OSC staffing will continue to provide the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of staffing for the OSC, as described above, continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Sections IV.A and IV.D of Appendix E to 10 CFR Part 50 to describe the organization for coping with emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in OSC staffing are acceptable and do not impact the ability of the ERO to perform the required functions.

3.12.3 Technical Support Center

As described in Section H of the TMI Emergency Plan, the TSC is the onsite location utilized to support the Control Room for assessment of plant status and potential offsite impact, and for implementation of emergency actions. The TSC provides technical data and information to the EOF.

The proposed changes to the TMI Emergency Plan do not involve any physical modifications to, or layout/configuration changes, or relocation of the TSC. The TSC is located on the 1st floor of the Operations Support Facility, which is outside, but adjacent to, the Protected Area.

The proposed changes to the TSC Minimum Staff do not impact the capability to assess and monitor actual or potential offsite consequences of a radiological emergency. Appropriate assessment and mitigation are well within the capabilities of the proposed TSC staff provided in the tables below.

The following table illustrates the NRC staff's summary of the proposed changes to the TSC staffing in the post-shutdown emergency plan:

TSC Minimum Staff Positions	
Current Minimum Staff Positions	Proposed Minimum Staff Positions (response times are 60 minutes unless otherwise noted)
Station Emergency Director	Station Emergency Director
Radiation Protection Manager	Radiation Protection Manager
Maintenance Manager	Maintenance Manager
Operations Manager	Operations Manager
Technical Manager	Technical Manager
ENS Communicator	ENS Communicator
	Security Coordinator (Added)
TSC Director	<i>Position Eliminated</i>
Core Thermal Engineer	<i>Position Eliminated</i>
Mechanical Engineer	<i>Position Eliminated</i>
Electrical Engineer	<i>Position Eliminated</i>
SAMG Decision Maker (collateral)	<i>Position Eliminated</i>
SAMG Evaluator #1 (collateral)	<i>Position Eliminated</i>
SAMG Evaluator #2 (collateral)	<i>Position Eliminated</i>
Offsite Field Team #1 Personnel	Offsite Field Team #1 Personnel
Offsite Field Team #1 Driver	Offsite Field Team #1 Driver
Offsite Field Team #2 Personnel	Offsite Field Team #2 Personnel (@90 mins)
Offsite Field Team #2 Driver	Offsite Field Team #2 Driver (@90 mins)
Onsite Field Team #1 Personnel	Onsite Field Team #1 Personnel
Onsite Field Team #1 Driver	<i>Position Eliminated</i>
TSC Augmented Staff Positions	
Current Positions	Proposed Positions
Security Coordinator	<i>Assigned to Minimum Staff</i>
Radiation Controls Coordinator	<i>Position Eliminated</i>
Radiation Controls Engineer	<i>Position Eliminated</i>
TSC Operations Communicator	<i>Position Eliminated</i>
Control Room Operations Communicator	<i>Position Eliminated</i>
Control Room Damage Control Communicator	<i>Position Eliminated</i>
State/Local Communicator	<i>Position Eliminated</i>
Logistics Coordinator	<i>Position Eliminated</i>
TSC Technical Communicator	<i>Position Eliminated</i>
TSC Damage Control Communicator	<i>Position Eliminated</i>
HPN Communicator	<i>Position Eliminated</i>
Clerical Staff	<i>Position Eliminated</i>

In Section 5.3.3, Technical Support Center,” of Attachment 1 to the letter dated March 19, 2018, the licensee provided, in part, that

ERO tasks have been reviewed and tasks for eliminated positions will be transferred appropriately. The analysis of the ERO staff tasks assigned by the Emergency Plan is found in Attachment 4 of this submittal. Attachment 4 evaluates and dispositions each EP task as being reassigned or eliminated and provides justification, as appropriate. It is ascertained from the Attachment 4 assessment, that given the elimination of credible accidents involving an operating reactor, the proposed ERO Minimum Staff can continue to satisfactorily perform their existing Emergency Plan responsibilities as well as any transferred responsibilities.

The FMTs will report to the TSC to obtain equipment (and vehicles) and will receive initial briefing from the TSC Radiation Protection Manager. Once dispatched the offsite FMTs will be controlled by the EOF Protective Measures Group. The second offsite FMT is a backup team and is not required for TSC or EOF activation. The on-site FMT will remain under the control of the TSC RPM and will not require a vehicle.

The licensee proposes to remove all the TSC Non-Minimum Augmented Staff, except for the Security Coordinator, following permanent shutdown. The Security Coordinator is being designated as a Minimum Staff position to support the Station Emergency Director in implementing accountability and evacuation actions, and responding to a security or hostile-action based event.

The present ERO staffing is intended to address the risks to public health and safety inherent in an operating power reactor. The risk in the permanently shutdown and defueled condition is significantly reduced. Remaining ERO positions will inherit tasks from eliminated positions; however, this has been evaluated as not impact the ability of the TSC to perform its designated mission for the scope of remaining applicable accidents. As such, elimination of the non-minimum staff positions of Rad Controls Coordinator, Rad Controls Engineer, TSC Operations Communicator, Control Room Operations Communicator, Control Room Damage Control Communicator, Logistics Coordinator, TSC Technical Communicator, TSC Damage Control Communicator, State/local Communicator, and HPN Communicator positions do not impact the ability of the ERO to perform the required functions based on the permanent shutdown and defueled condition of the facility.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown ERO staffing. The proposed staff in the TSC will continue to provide adequate resources to perform the emergency classification and site protective measures, including managing emergency exposure controls of workers on site, and performance of site accountability and evacuation. In addition, the TSC is adequately staffed to prioritize and manage station repair and corrective actions activities based on the permanently shutdown and defueled condition of the facility. Therefore, the NRC staff concludes that the proposed level of TSC staffing will continue to provide plant management and technical support to the operating personnel located in the Control Room for the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of augmented TSC staffing, as described above, continues to meet planning standard 10 CFR 50.47(b)(2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with emergencies, commensurate with

the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in TSC staffing are acceptable and do not impact the ability of the ERO to perform the required functions.

3.12.4 Emergency Operations Facility (EOF)

As described in Section H of the TMI Emergency Plan, the EOF is the location where the Corporate Emergency Director will direct a staff in evaluating and coordinating the overall company activities involved with an emergency, to include coordination of radiological and environmental assessments; determination of recommended public protective actions; management of recovery operations; and coordination of emergency response activities with federal, state, and local agencies.

The EOF is located west of Philadelphia, at 175 North Caln Road, Coatesville PA. This facility supports Limerick, Peach Bottom and TMI Stations. The EOF facility is currently shared between the three nuclear plants. The EOF staffing for TMI will align with the Exelon Fleet EOF staffing levels. The proposed changes to the TMI Emergency Plan do not involve any physical modifications to, or layout/configuration changes to the EOF.

The proposed changes to the EOF Minimum Staff also do not impact the capability to assess and monitor actual or potential offsite consequences of a radiological emergency. Appropriate assessment and mitigation are well within the capabilities of the proposed EOF minimum staff provided in the table below.

The following table illustrates the NRC staff's summary of the proposed changes to the EOF staffing in the post-shutdown emergency plan:

EOF Minimum Staff Positions	
Current Minimum Staff Positions	Proposed Minimum Staff Positions (Response times are 60 minutes unless otherwise noted)
Corporate Emergency Director	Corporate Emergency Director
State/Local Communicator	State/Local Communicator
Radiation Protection Manager	Radiation Protection Manager
Dose Assessment Coordinator	Dose Assessment Coordinator
HPN Communicator	<i>Designated Full Augmentation per EPIP</i>
EOF Director	<i>Designated Full Augmentation per EPIP</i>
Logistics Manager	<i>Designated Full Augmentation per EPIP</i>
Environmental Coordinator	<i>Designated Full Augmentation per EPIP</i>
	Computer Specialist (@ 90 min.) Added

EOF Augmented Staff Positions	
Current Positions	Proposed Positions
Technical Support Manager	<i>Designated Full Augmentation per EPIP</i>
Regulatory Liaison	<i>Designated Full Augmentation per EPIP</i>
Dose Assessor	<i>Designated Full Augmentation per EPIP</i>
Operations Advisor	<i>Designated Full Augmentation per EPIP</i>
Technical Advisor	<i>Designated Full Augmentation per EPIP</i>
Computer Specialist	<i>Designated as Minimum Staff (@ 90 min)</i>
EOF Security Coordinator	<i>Designated Full Augmentation per EPIP</i>
EOF Administrative Coordinator	<i>Designated Full Augmentation per EPIP</i>
State EOC Liaison	<i>Designated Full Augmentation per EPIP</i>
EOF Clerical Support	<i>Designated Full Augmentation per EPIP</i>
Operations Assistant	<i>Position Eliminated</i>
Field Team Communicator	<i>Designated Full Augmentation per EPIP</i>
EOF ENS Communicator	<i>Designated Full Augmentation per EPIP</i>
EOF Events Recorder	<i>Designated Full Augmentation per EPIP</i>
EOC (Governmental) Communicator	<i>Designated Full Augmentation per EPIP</i>
	<i>HPN Communicator: Designated Full Augmentation per EPIP</i>
	<i>EOF Director Designated Full Augmentation per EPIP</i>
	<i>Logistics Manager Designated Full Augmentation per EPIP</i>
	<i>Environmental Coordinator Designated Full Augmentation per EPIP</i>

In Section 5.3.5, "Emergency Operation Center (EOF)," of Attachment 1 to the letter dated March 19, 2018, the licensee provided, in part, that:

The analysis of the ERO staff tasks assigned by the Emergency Plan is found in Attachment 4 of this submittal. Attachment 4 evaluates and dispositions each EP task as being reassigned or eliminated and provides justification, as appropriate. It is ascertained from the Attachment 4 assessment, that given the elimination of credible accidents involving an operating reactor, the proposed ERO Minimum Staff can continue to satisfactorily perform their existing Emergency Plan responsibilities as well as any transferred responsibilities. In addition, the functional analysis in Section 5.2 provides justification for making the EOF Director, Environmental Coordinator, HPN Communicator, and Logistics Manager full augmentation positions that provide support to the EOF Minimum Staffing Positions and are not required to activate the EOF and take Command and Control of the Event.

The full augmentation positions are proposed to be removed from the SEP and will be managed and controlled by EPIPs. The full augmented positions will still be assigned to ERO teams, be expected to maintain Fitness-for-Duty during

assigned duty weeks, and are required to respond to the EOF at an Alert or higher classification. As shown in Attachment 4, these positions provide support to the Minimum Staff positions that continue to provide the performance of the Emergency Planning Functions. As justified in the Functional Analysis in Section 5.2, the proposed EOF staffing requirements relocation to the EIPs do not impact the capabilities of the EOF staff. The positions can be removed from the SEP and managed and controlled via EIPs without placing an undue burden on the remaining ERO positions in the EOF and without increasing the risk to public health and safety.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown ERO staffing. As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel is reduced, as compared to an operating plant. The remaining ERO positions will assume duties from the eliminated positions. The licensee's analysis of proposed post-shutdown ERO staffing indicates that the eliminated positions are not needed, the tasks being transferred can be adequately performed by the remaining ERO positions, and the reassigned duties and administrative responsibilities will not adversely affect the capability of the EOF to perform its functions given the limited activities required for post-shutdown condition. Therefore the NRC staff concludes that the proposed level of EOF staffing will continue to provide management of overall licensee emergency response (including coordination with Federal, State, and local officials), coordination of radiological and environmental assessments, and determination of recommended public protective actions for the level of support required for the remaining DBAs and in response to an SFP accident.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, the NRC staff finds that the proposed level of augmented EOF staffing, as described above, continues to meet planning standard 10 CFR 50.47(b)(2) for timely augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in EOF staffing are acceptable and do not impact the ability of the ERO to perform the required functions.

3.12.5 Joint Information Center (JIC)

The JIC is the facility in which media personnel gather to receive information related to the emergency event. The JIC is the location where approved news releases will be provided to the media for dissemination to the public.

The JIC is at the same location as the EOF. The JIC staffing for TMI will align with the Exelon Fleet JIC staffing levels. The proposed changes to the TMI Emergency Plan do not involve any physical modifications to, or layout/configuration changes to the JIC.

The following tables illustrate the proposed changes to the JIC staffing in the post-shutdown emergency plan:

TMI JIC Minimum Staff Positions	
Current Positions	Proposed Positions (response times are 90 min)
JIC Director	JIC Director
Corporate Spokesperson	Corporate Spokesperson
Public Information Director	Public Information Director
TMI JIC Augmented Staff Positions	
Current Positions	Proposed Positions
JIC Coordinator	<i>Designated Full Augmentation per EPIP</i>
News Writer	<i>Designated Full Augmentation per EPIP</i>
Media Monitoring Staff	<i>Designated Full Augmentation per EPIP</i>
Clerical Support	<i>Designated Full Augmentation per EPIP</i>
Access Controller JIC	<i>Designated Full Augmentation per EPIP</i>
Radiation Protection Spokesperson	<i>Designated Full Augmentation per EPIP</i>
Technical Spokesperson	<i>Designated Full Augmentation per EPIP</i>
Events Recorder	<i>Designated Full Augmentation per EPIP</i>
Rumor Control Staff	<i>Designated Full Augmentation per EPIP</i>
Administrative Coordinator	<i>Designated Full Augmentation per EPIP</i>

In Section 5.3.6, “Joint Information Center (JIC),” of Attachment 1 to the letter dated March 19, 2018, the licensee provided, in part, that:

The functional analysis of Section 5.2 justifies that the current JIC minimum staff can perform required Emergency Plan Functions. The proposed change will require that the JIC Minimum Staff positions respond within 90-minutes of an Alert or higher emergency classification. The activation of the JIC at the Alert classification allows for the organization to be staffed at an earlier classification level than recommended by industry guidance. The Exelon Communications Department will provide for the media interface tasks upon initial declaration until the JIC can be activated.

The full augmentation positions are proposed to be removed from the SEP and will be managed and controlled by EPIPs. The full augmented positions will still be assigned to ERO teams, be expected to maintain Fitness-for-Duty during assigned duty weeks, and are required to respond to the EOF at an Alert or higher classification. As shown in Attachment 4, these positions provide support to the Minimum Staff positions that continue to provide the performance of the Emergency Planning Functions. As justified in the Functional Analysis in Section 5.2, the proposed JIC staffing requirements relocation to the EPIPs do not impact the capabilities of the JIC staff. The positions can be removed from the SEP and managed and controlled via EPIPs without placing an undue burden on the remaining ERO positions in the JIC and without increasing the risk to public health and safety. These full augmentation positions will still respond to an emergency and staff the facility.

The NRC staff reviewed the licensee's analysis of proposed post-shutdown ERO staffing. As discussed previously, the spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel is reduced, as compared to an operating plant. The remaining ERO positions will assume duties from the eliminated positions. The licensee's analysis of proposed post-shutdown ERO staffing indicates that the eliminated positions are not needed, the tasks being transferred can be adequately performed by the remaining ERO positions, and the reassigned duties and administrative responsibilities will not adversely affect the capability of the JIC to perform its functions given the limited activities required for post-shutdown condition. Therefore the NRC staff concludes that the proposed level of JIC staffing will continue to provide management of overall licensee emergency response (including coordination with Federal, State, and local officials) for public information activities, including media monitoring and interface, rumor control, and information development, required for the remaining DBAs and in response to an SFP accident.

Based on the NRC staff's review of the information provided in Exelon's application dated March 19, 2018, as supplemented by letters dated August 13, 2018, and November 20, 2018, staff finds that the proposed level of augmented JIC staffing, as described above, continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) for timely initial response and augmentation of response capabilities, and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the TMI facility. As such, the proposed changes in JIC staffing are acceptable and do not impact the ability of the ERO to perform the required functions.

3.13 Potential Impact of Staff Changes on Off-site Emergency Response Organizational Interfaces

In Section 5.4, "Assessment of Staff Changes on On-site Emergency Response Organizational Interfaces," of Attachment 1 to the letter dated March 19, 2018, the licensee stated, in part:

The proposed changes to the TMI Emergency Plan were evaluated for impacts on the ability of State and local response organizations to effectively implement their FEMA-approved Radiological Emergency Plans.

The following list of additional actions involve support or direct interface with the State of Pennsylvania, are not being revised and will continue to be performed by ERO positions as currently assigned and shown in Attachment 4.

1. Corporate Emergency Director – Following assumption of Command and Control, ensure that Federal, state and local authorities and industry support agencies remain cognizant of the status of the emergency situation. If requested, dispatch informed individuals to offsite governmental Emergency Operation Centers (EOCs).
2. EOF Radiation Protection Manager – Ensure State authorities are provided information pertaining to Exelon Field Monitoring Team activities and sample results.

3. JIC Corporate Spokesperson – Coordinate with Federal, state and local agencies, as well as with other organizations involved in the emergency response, to maintain factual consistency of information to be conveyed to the news media/public.
4. JIC Director – Coordinate with Federal, state and local agencies, as well as with other organizations involved in the emergency response, to maintain factual consistency of information to be conveyed to the news media/public. Coordinate with the Corporate Spokesperson, Public Information Director, Federal, State and Local agencies, regarding the content, format and timing of press releases and news briefings.
5. TSC Technical Manager – Act as the TSC liaison with state and appropriate NRC Site Team representatives.

Although the State EOC liaisons/communicators have been removed from the SEP and will be managed and controlled by EIPs, they are still available to be dispatched per Corporate Emergency Director discretion.

Exelon also concluded there were no interface or coordination impediments identified because of the change to the TMI Emergency Plan.

A preliminary review of the proposed changes prior to the formal submission of the LAR has been performed by the Commonwealth of Pennsylvania.

In Attachment 6, "Three Mile Island Nuclear Station Correspondence with State of Pennsylvania," to the letter dated March 19, 2018, an e-mail was provided from the Pennsylvania Department of Environmental Protection, Bureau of Radiation Protection, to the licensee, which stated in part, "A review of the proposed changes prior to the formal submission of the LAR for Post Shutdown Emergency Plan has been performed by the Commonwealth of Pennsylvania with no further comments at this time."

By letter dated April 4, 2018 (Reference 9), the NRC staff requested FEMA's review of the proposed licensee staffing changes against the current FEMA-approved State and local radiological emergency preparedness (REP) plans to verify that no potential adverse impacts exist that would preclude the effective implementation of State and local REP plans. In a letter dated June 6, 2018 (Reference 10), FEMA responded that the FEMA REP staff reviewed the licensee's proposed staffing changes to the TMI EOF and JIC and confirmed "that no adverse impacts exist that would preclude the effective implementation of State and local REP plans or impact FEMA's finding of reasonable assurance for TMI."

Based on the NRC staff's review of the information addressed above, as confirmed by the FEMA evaluation of potential, unintended impacts on offsite ERO Interface REP plans, the NRC staff finds that the proposed changes to the TMI SEP staffing are acceptable and continue to meet the planning standards of 10 CFR 50.47(b)(1) and (2), and the requirements of Section IV.A of Appendix E to 10 CFR Part 50 to describe the organization for coping with emergencies, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition at the TMI facility.

3.14 Summary

Based on the evaluation above, the NRC staff finds that the proposed emergency plan changes meet the planning standards in 10 CFR 50.47(b)(1) and (2), and the requirements in Sections IV.A and IV.D of Appendix E to 10 CFR Part 50 and 10 CFR 50.72(a)(3), and provide reasonable assurance that adequate protective measures can and will continue to be taken in the event of a radiological emergency, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendment on XXXXX XX, 2019. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment relates to changes in recordkeeping, reporting, or administrative procedures or requirements. 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 (83 FR XXXXX; XXXXX XX, 2019). 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.

8.0 REFERENCES

1. Fewell, J. Bradley, Exelon Generation Company, LLC, letter to U.S. Nuclear Regulatory Commission, "Certification of Permanent Cessation of Power Operations for Three Mile Island Nuclear Station, Unit 1," dated June 20, 2017 (Agencywide Documents Access and Management System (ADAMS) NRC Accession No. ML17171A151).
2. Gallagher, Michael P., Exelon Generation Company, LLC, letter to U.S. Nuclear Regulatory Commission, "License Amendment Request - Proposed Changes to the Three Mile Island Emergency Plan for Post-Shutdown and Permanently Defueled Condition," dated March 19, 2018 (ADAMS Accession No. ML18078A578).
3. Gallagher, Michael P., Exelon Generation Company, LLC, letter to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information (RAI) and Supplemental Information Regarding License Amendment Request - Proposed Changes to the Three Mile Island Emergency Plan for Post-Shutdown and Permanently Defueled Condition," dated August 13, 2018 (ADAMS Accession No. ML18225A180).

4. Gallagher, Michael P., Exelon Generation Company, LLC, letter to U.S. Nuclear Regulatory Commission, "Supplemental Information Regarding License Amendment Request - Proposed Changes to the Three Mile Island Emergency Plan for Post-Shutdown and Permanently Defueled Condition," dated November 20, 2018 (ADAMS Accession No. ML18324A404).
5. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.101, Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors," October 1981 (ADAMS Accession No. ML090440294).
6. U.S. Nuclear Regulatory Commission/Federal Emergency Management Agency, NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980 (ADAMS Accession No. ML040420012).
7. U.S. Nuclear Regulatory Commission, NSIR/DPR-ISG-01, "Interim Staff Guidance – Emergency Planning for Nuclear Power Plants," dated November 2011 (ADAMS Accession No. ML113010523).
8. Nuclear Energy Institute (NEI), topical report NEI 10-05, Revision 0, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," June 2011 (ADAMS Accession No. ML111751698).
9. Anderson, Joseph D., U.S. Nuclear Regulatory Commission, letter to Vanessa Quinn, Federal Emergency Management Agency, "Federal Emergency Management Agency Review Requested of Revision to the Three Mile Island Nuclear Station Emergency Plan for Post-Shutdown and Permanently Defueled Condition," dated April 4, 2018 (ADAMS Accession No. ML18085B172).
10. Quinn, Vanessa E., Federal Emergency Management Agency, letter to Joseph Anderson, U.S. Nuclear Regulatory Commission, "Federal Emergency Management Agency (FEMA) Review Requested of Revision to the Three Mile Island Nuclear Station Emergency Plan for Post-Shutdown and Permanently Defueled Condition," dated June 6, 2018 (ADAMS Accession No. ML18163A242).

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