



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

December 2, 2020

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

**SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNITS 1 AND 2 – ISSUANCE OF
AMENDMENT NO. 299 FOR UNIT 1 RE: PERMANENTLY DEFUELED
EMERGENCY PLAN AND EMERGENCY ACTION LEVEL SCHEME CHANGES
(EPID L-2019-LLA-0144)**

Dear Mr. Hanson:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 299 to Renewed Facility License No. DPR-50 for the Three Mile Island Nuclear Station, Unit 1, in response to your application dated July 1, 2019, as supplemented by letters dated October 9, 2019, and February, 19, and November 4, 2020.

The amendment revises the site emergency plan and emergency action level scheme for the permanently shutdown and defueled condition.

In accordance with Possession-Only License No. DPR-73 for the Three Mile Island Nuclear Station, Unit 2, the emergency plan for Unit 1 is considered to encompass Unit 2. Therefore, an amendment to the Unit 2 license is not required.

A copy of the related safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's monthly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Theodore B. Smith". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Theodore B. Smith, Project Manager
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket Nos.: 50-289 and 50-320

Enclosures:

1. Amendment No. 299 to DPR-50
2. Safety Evaluation

cc: Listserv

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNITS 1 AND 2 – ISSUANCE OF AMENDMENT NO. 299 FOR UNIT 1 RE: PERMANENTLY DEFUELED EMERGENCY PLAN AND EMERGENCY ACTION LEVEL SCHEME CHANGES (EPID L-2019-LLA-0144) DATED December 2, 2020

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DATE	12/2/2020			

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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-289

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY LICENSE

Amendment No. 299
Renewed License No. DPR-50

1. The Nuclear Regulatory Commission (NRC, the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (the licensee), dated July 1, 2019, as supplemented by letters dated October 9, 2019, February 19, 2020, and November 4, 2020, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, by the Amendment No. 299, Renewed Facility License No. DPR-50 is hereby amended to authorize revision to the Three Mile Island Nuclear Station Emergency Plan and Emergency Action Level Scheme as set forth in the licensee's application dated July 1, 2019, as supplemented by letters dated October 9, 2019, February 19, 2020, and November 4, 2020, and evaluated in the NRC staff's safety evaluation for this amendment.
3. This license amendment is effective 488 days following the permanent cessation of power operations of Three Mile Island Nuclear Station, Unit 1 and shall be implemented within 60 days of the effective date.

FOR THE NUCLEAR REGULATORY COMMISSION

John W. Lubinski, Director
Office of Nuclear Material Safety
and Safeguards

Date of Issuance: December 2, 2020



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR MATERIAL

SAFETY AND SAFEGUARDS

RELATED TO AMENDMENT NO. 299 TO

RENEWED FACILITY LICENSE NO. DPR-50

EXELON GENERATION COMPANY, LLC

THREE MILE ISLAND NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-289 AND 50-320

1.0 INTRODUCTION

By application dated July 1, 2019 (Reference 1), as supplemented by letters dated October 9, 2019 (Reference 2), February 19, 2020 (Reference 3), and November 4, 2020 (Reference 4), Exelon Generation Company, LLC (Exelon, the licensee) requested changes to the site emergency plan and emergency action level (EAL) scheme for the Three Mile Island Nuclear Station (TMI). The proposed amendment would revise the TMI Site Emergency Plan, referred to hereafter as the permanently defueled emergency plan (PDEP), and the TMI EAL scheme based on the U.S. Nuclear Regulatory Commission (NRC, the Commission) staff's granting of exemptions in response to the Commission's approval as documented in the Staff Requirements Memorandum (SRM) to SECY-20-0041, "Request by Exelon Generation Company, LLC for Exemptions from Certain Emergency Planning Requirements for the Three Mile Island Nuclear Station" (Reference 5).

The licensee's letter dated July 1, 2019, contained a copy of the proposed PDEP and EAL scheme, including a description and evaluation of the proposed changes and a comparison to the NRC-endorsed EAL scheme provided in the Nuclear Energy Institute (NEI) document NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated November 2012 (Reference 6).

The supplemental letters dated October 9, 2019, February 19, 2020, and November 4, 2020, 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 original proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on September 10, 2019 (84 FR 47548).

1.1 Background

TMI is located in an area of low population density about 12 miles southeast of Harrisburg, Pennsylvania. The area is in Londonderry Township, Dauphin County, about 2.5 miles from the southern tip of Dauphin County, where the county is coterminous with York and Lancaster Counties. The TMI site is part of an 814-acre tract consisting of the Three Mile Island land mass and several adjacent islands, which were purchased by a predecessor. The island, which is situated about 900 feet from the east bank and approximately 1 mile from the west bank of the Susquehanna River, is elongated parallel to the flow of the river with its longest axis oriented approximately due north and south. The north and south ends of the island have access bridges, which connect the island to State Highway Route 441. The north access bridge is used daily. Route 441 is a two-lane highway, which runs parallel to TMI on the east bank of the Susquehanna River and is more than 2,000 feet from the TMI reactors at the closest point. The exclusion area for TMI is a 2,000-foot radius and for the purposes of emergency planning, the exclusion area and the site boundary are considered the same.

TMI Unit 2 (TMI-2) has been in a non-operating status since the 1979 accident. Its licensee has conducted a substantial program to defuel the reactor vessel and decontaminate the facility. The plant defueling was completed in April 1990 and all spent fuel has been removed, except for some debris in the reactor coolant system. The removed fuel is currently in storage at the Idaho National Laboratory, with the U.S. Department of Energy having taken title to and possession of the fuel. TMI-2 has a possession-only license and is currently maintained in accordance with the NRC-approved SAFSTOR condition (method by 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.

Exelon is the holder of Renewed Facility License No. DPR-50 for TMI Unit 1 (TMI-1), but not the holder of Possession-Only License No. DPR-73 for TMI-2. However, Exelon maintains the emergency planning and preparedness (EP) responsibilities for TMI-2 through a service agreement and the proposed PDEP and EAL scheme would encompass both TMI-1 and TMI-2. The license amendment request would not impact Exelon's ability to maintain the service agreement.

By letter dated June 20, 2017 (Reference 7), pursuant to paragraph 50.82(a)(1)(i) of Title 10 of the *Code of Federal Regulations* (10 CFR), Exelon certified to the NRC that it planned to permanently cease power operations at TMI-1 on or about September 30, 2019. Subsequently, Exelon permanently ceased power operations at TMI-1 on September 20, 2019. By letter dated September 26, 2019 (Reference 8), pursuant to 10 CFR 50.82(a)(1)(ii), Exelon certified that all fuel had been permanently removed from the TMI-1 reactor vessel and placed in the spent fuel pool (SFP) as of that date. Upon the docketing of these certifications, pursuant to 10 CFR 50.82(a)(2), the 10 CFR Part 50 license for TMI-1 no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel.

The licensee submitted the proposed TMI PDEP and EAL scheme to the NRC in accordance with 10 CFR 50.54(q)(4), contingent on the NRC's prior approval of certain exemptions from specific requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50. By letter dated December 1, 2020 (Reference 9), the NRC staff granted Exelon exemptions from certain EP requirements in 10 CFR 50.47 and Appendix E to 10 CFR Part 50, in accordance with 10 CFR 50.12, "Specific exemptions," based, in part, on the low risk of offsite radiological consequences associated with the permanently shutdown and defueled condition at TMI.

In granting the requested exemptions, the NRC primarily relied on the TMI site-specific analyses, which provided reasonable assurance that: (1) an offsite radiological release would not exceed the early phase protective action guides (PAG) provided in the U.S. Environmental Protection Agency (EPA) EPA-400/R-17/001, "PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents," dated January 2017 (Reference 10), at the site's exclusion area boundary for the remaining design-basis accidents (DBAs) applicable to the TMI facility in its permanently shutdown and defueled condition; and (2) in the highly unlikely event of a severe beyond-DBA resulting in a loss of all cooling to the spent fuel stored in the TMI SFP, there would be a significant amount of time between the initiating event and the possible onset of conditions that could result in a zirconium cladding fire. This time provides a substantial opportunity for event mitigation. TMI is required to maintain effective strategies, sufficient resources, and adequately trained personnel to mitigate such an event. While a beyond DBA is highly unlikely, if State or local governmental officials determine that offsite protective actions are warranted, then sufficient time and capability would also be available for offsite response organizations to implement these measures using a comprehensive emergency management plan (CEMP) or "all-hazards" approach.¹

The Commission's approval of the requested exemptions is documented in a July 27, 2020 SRM responding to SECY-20-0041, dated May 5, 2020 (Reference 12). With the NRC's approval of the requested EP exemptions, Exelon stated that the proposed TMI PDEP will continue to meet the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50, as exempted.

In addition to the proposed changes in the TMI PDEP, Exelon is proposing to change the entire EAL scheme to reflect the permanently shutdown and defueled condition of TMI. In accordance with Section IV.B.2 of Appendix E to 10 CFR Part 50, the licensee must receive NRC approval before implementing a change to the entire EAL scheme. The licensee stated that the proposed changes to the EAL scheme are consistent with the methodology recommended for permanently shutdown and defueled reactors, as provided in NRC-endorsed NEI 99-01, Revision 6.

2.0 REGULATORY EVALUATION

2.1 Emergency Plan

Section 50.47 of 10 CFR sets forth the emergency plan requirements for nuclear power reactors. The regulation in 10 CFR 50.47(a)(1)(i) states, in part:

no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

Section 50.47(b) of 10 CFR establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that the licensee can and will take adequate protective measures in the event of a radiological emergency.

¹ A CEMP in this context, also referred to as an emergency operations plan, is addressed in the Federal Emergency Management Agency (FEMA) Comprehensive Preparedness Guide 101, "Developing and Maintaining Emergency Operations Plans," Version 2.0, dated November 2010 (Reference 11).

Appendix E, Section IV, "Content of Emergency Plans," to 10 CFR Part 50 provides the requirements for the content of the emergency plans.

In addition, 10 CFR 50.72(a)(3) states:

The 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.

The EP regulations contained in 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50 apply to both operating nuclear power reactors and permanently shutdown and defueled nuclear power reactors. However, the EP regulations are silent with regard to the fact that once a nuclear power reactor permanently ceases operation and permanently removes fuel from the reactor vessel, the risks of credible emergency accident scenarios at the facility are greatly reduced. Therefore, the consistent practice for permanently shutdown and defueled nuclear power reactors has been for the licensees to request exemptions under 10 CFR 50.12, which allow changes to the facility's emergency plan commensurate with the credible site-specific risks that are present during decommissioning. Such EP exemptions generally recognize the reduction in radiological risk as spent fuel ages and the preclusion of accidents that are strictly applicable to an operating nuclear power reactor.

The practice of granting exemptions from the Commission's EP regulations is a well-established part of the NRC regulatory process. This process allows licensees to address site-specific situations or to implement alternative approaches in response to circumstances that are not necessarily contemplated in regulations that are generally intended for operating nuclear power reactors. The exemption process, which allows the NRC to provide relief in appropriate circumstances where safety and security continue to be assured, is not unique to the decommissioning of nuclear power reactors or to the specific EP technical areas. The Commission makes decisions on exemption requests on a site-specific, case-by-case basis, following an established process that includes the NRC staff's detailed technical assessment on individual exemption requests. According to 10 CFR 50.12, the Commission may grant exemptions from the requirements of its regulations, which are authorized by law, will not present an undue risk to the public health and safety, are consistent with the common defense and security, and present special circumstances.

The guidance in Revision 1 to NUREG-0654/FEMA-REP-1 (NUREG-0654), "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 1980 (Reference 13), provides an acceptable method for nuclear power reactor licensees to develop radiological emergency response plans. NUREG-0654 provides guidance for the format and content of an emergency plan, which can be applied to the planning standards in 10 CFR 50.47(b). Attachment 1, "Staff Guidance for Evaluation of Permanently Defueled Emergency Plans," to Interim Staff Guidance (ISG) document NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," dated May 11, 2015 (Reference 14), provides an acceptable method for the NRC staff's review of PDEPs for sites undergoing decommissioning and was developed from the remaining applicable evaluation criteria in Section II, "Planning Standards and Evaluation Criteria," of NUREG-0654.

2.2 Emergency Action Level Scheme

Paragraph 50.47(b)(4) of 10 CFR, as exempted for TMI (exempted language indicated by strikeout and bolded text), requires that a licensee's emergency response plan contain:

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, ~~and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.~~

This requirement emphasizes a standard emergency classification and action level scheme, assuring that implementation methods are relatively consistent throughout the industry for a given reactor and containment design, while simultaneously providing an opportunity for a licensee to modify its EAL scheme as necessary to address plant-specific design considerations or preferences.

Section IV.B of Appendix E to 10 CFR Part 50, as exempted for TMI (exempted language indicated by strikeout and bolded text), states:

1. The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within ~~and outside~~ the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite ~~and offsite~~ monitoring. ~~By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant.~~ The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.
2. A licensee desiring to change its entire emergency action level scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change. Licensees shall follow the change process in § 50.54(q) for all other emergency action level changes.

The NRC staff's review is based upon a proposed revision to the TMI EAL scheme provided in the licensee's letter dated July 1, 2019, as supplemented by letters dated October 9, 2019, February 19, 2020, and November 4, 2020. As part of this review, the NRC staff assessed the site-specific modifications made by TMI to the guidance provided by NEI 99-01, Revision 6. The NRC endorsed this methodology by letter dated March 28, 2013 (Reference 15), as an acceptable method for developing EALs required by 10 CFR 50.47(b)(4), Section IV.B.1 of Appendix E to 10 CFR Part 50, and the associated planning standard evaluation criteria in

Section II.D of NUREG-0654. In addition, the methodology also provides guidance for permanently shutdown and defueled nuclear power reactors for the development of a site-specific emergency classification scheme.

3.0 TECHNICAL EVALUATION

3.1 Emergency Plan

Pursuant to Exelon's certifications of permanent cessation of operations and permanent removal of fuel from the TMI-1 reactor vessel under 10 CFR 50.82, "Termination of license," no reactor operations can take place and Exelon is prohibited from moving the fuel from the SFP to the TMI-1 reactor vessel. Since the license for TMI-2 had previously been modified to allow possession but not operation of the facility, the certifications of permanent cessation of operations and permanent removal of fuel are, by rule, deemed to have also been submitted for TMI-2. Consequently, the PDEP describes the licensee's response to emergencies that may arise at the TMI site while it is in a permanently shutdown and defueled configuration. Recognizing that there are no longer any credible DBAs that would result in offsite dose consequences large enough to require offsite radiological emergency preparedness (REP) plans in accordance with 44 CFR Part 350, "Review and Approval of State and Local Radiological Emergency Plans and Preparedness," the PDEP no longer specifies the requirements for formal offsite REP planning. Additionally, the onsite EP activities contained in the TMI PDEP are reduced in scope. The PDEP specifically implements the planning standards of 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50, as exempted by the NRC's letter to Exelon dated December 1, 2020.

This safety evaluation summarizes the NRC staff's technical evaluation of the TMI PDEP, based on the planning standards of 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50, as exempted for TMI, and using the remaining applicable evaluation criteria provided in NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-002. The proposed changes, as exempted for TMI, are shown with a strikethrough of the current wording associated with the regulations.

3.1.1 Assignment of Responsibility (Organizational Control)

Paragraph 50.47(b)(1) of 10 CFR, as exempted for TMI, requires in a licensee's emergency plan that:

Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations ~~within the Emergency Planning Zones~~ have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

The Shift Manager position, which is staffed 24 hours a day, 7 days a week, serves as the senior management position at the facility during off-hours. This position is responsible for monitoring facility conditions and approving onsite activities. The Shift Manager has the authority, management ability, and technical knowledge to classify and declare a facility emergency and assume the role of Emergency Director.

In addition to the Shift Manager, designated on-shift staff positions include two (2) Non-Certified Operators (NCO) and one (1) Radiation Protection (RP) Technician, along with security personnel. The TMI Emergency Response Organization (ERO) is activated at the declaration of an Alert classification level and will augment the on-shift staff within approximately 2 hours of the declaration of an Alert classification level. However, the ERO may be activated, in part or in whole, at the discretion of the Shift Manager/Emergency Director for an Unusual Event.

The normal on-shift complement provides the initial response to an emergency. This group is trained to handle emergency situations, including implementation of the TMI PDEP and making initial accident assessments, emergency classifications, notifications, and protective action recommendations until ERO augmentation has occurred. The minimum staff required to conduct routine and immediate emergency mitigation is maintained at the facility. The designated on-shift personnel are those positions required to direct or perform site-specific mitigation strategies required for a loss of SFP inventory.

Arrangements are in place with offsite response organizations (OROs) through letters of agreement for ambulance services, treatment of contaminated and injured patients, fire support services, and law enforcement response, as requested by the facility. Evidence of agreements with participating local services is listed in Appendix 4 of the PDEP.

OROs that may respond onsite as requested at the TMI facility include:

- Medical Support Organizations and Personnel
 - Londonderry Volunteer Fire Company (ambulance service)
 - South Central Emergency Medical Services Inc.
 - Northwest Emergency Medical Services
 - Hershey Medical Center
 - Pinnacle Health Harrisburg Hospital

- Firefighting Organizations
 - Bainbridge Volunteer Fire Company
 - Middletown Volunteer Fire Department
 - Londonderry Volunteer Fire Company
 - Elizabethtown Fire Department
 - Lower Swatara Volunteer Fire Department
 - Susquehanna Area Regional Airport Authority

- Law Enforcement Agencies
 - Pennsylvania State Police

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP adequately describes the concept of operations for individuals and organizations responsible for responding to emergencies at the site, identifies the position of Shift Manager/Emergency Director as the individual in charge of the emergency response, and identifies the minimum staff on duty at the plant during all shifts to provide emergency response. Additional personnel are available on an on-call basis to respond to plant emergencies. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(1), and the requirements of Sections IV.A.1, A.2, A.4, and A.7 of Appendix E

to 10 CFR Part 50, as exempted for TMI, pertaining to assignment of responsibility (organization control), are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.2 Onsite Emergency Organization

Paragraph 50.47(b)(2) of 10 CFR requires that a licensee's emergency response plan contain:

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.

The TMI facility has designated personnel on-shift at all times, including a designated Shift Manager, two NCOs, and one RP Technician, who would provide the initial response to an event. The Shift Manager is the on-shift individual who initially declares an emergency classification and assumes the role of Emergency Director. The Shift Manager has the authority to immediately and unilaterally initiate any emergency actions. The TMI PDEP also specifies the non-delegable and delegable responsibilities for the Emergency Director position.

As an extension of their normal duties, TMI personnel will be available during emergencies and will receive duty-specific training to perform emergency response activities. This includes facility on-shift, maintenance, RP, and security personnel. Designated members of the on-shift staff fulfill roles within the ERO appropriate to their training and experience. The on-shift staffing assignments include the roles and responsibilities for their emergency response functions. The relationship between normal and emergency response positions for the shift personnel is unchanged when an event occurs.

The on-shift and the augmented ERO positions that fulfill emergency staffing capabilities are depicted in Table 7.1, "Minimum On-Shift and ERO Staffing Requirements," of the TMI PDEP. This table, along with Figure 7.1, "Normal On-Shift and Emergency Response Organization," provides a graphical representation of the functional responsibilities for designated on-shift positions and the augmented positions that fulfill emergency staffing capabilities.

The TMI ERO, when mobilized, augments the normal on-shift organization to respond to declared emergencies. ERO personnel are trained and assigned to a position based on job qualifications or by being specifically trained to fill the position. The ERO is activated at the declaration of an Alert classification level or at the discretion of the Shift Manager/Emergency Director. The designated on-shift and augmented ERO staff are capable of continuous (24-hour) operations for a protracted period. Upon the initial declaration of an emergency classification, the Shift Manager assumes the responsibilities of the Emergency Director position, and mobilization of the ERO will be conducted at the direction of the Emergency Director. Plans and procedures are in place to ensure the timely activation of the ERO. The minimum augmented staff is an RP Coordinator and a Technical Coordinator.

The PDEP further provides that in the event of an emergency declaration at TMI requiring additional personnel and other support resources, the ERO can be augmented with manpower and equipment support from OROs responding onsite, as previously discussed in Section 3.1.1 of this safety evaluation. Arrangements are in place through letters of agreement for ambulance

services, treatment of contaminated and injured patients, fire support services, and law enforcement response, as requested by TMI.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP identifies: (1) the onsite ERO and its relationship to the normal shift complement; (2) that the on-shift individual responsible for emergency response is the Shift Manager, who has the authority and responsibility to initiate the functional responsibilities for emergency response; (3) adequate staffing to provide initial facility accident response in key functional areas; (4) that timely augmentation of response capabilities is available; (5) that local services are identified with letters of agreement in place; and (6) arrangements for the treatment and transportation of contaminated injured personnel. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(2), and the requirements of Sections IV.A.1, A.2, A.4, A.9, A.3, and C.1 of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to the onsite emergency organization, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.3 Emergency Response Support and Resources

Paragraph 50.47(b)(3) of 10 CFR, as exempted for TMI, requires that a licensee's emergency response plan contain:

Arrangements for requesting and effectively using assistance resources have been made, ~~arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility have been made~~, and other organizations capable of augmenting the planned response have been identified.

The Emergency Director is authorized to request assistance as needed, including offsite fire, ambulance, and local law enforcement response. Letters of agreement are in place for those local agencies that would respond to the site if requested and for the local hospitals that may be required to treat a contaminated injured individual from the site, as designated in the TMI PDEP. These letters of agreement are discussed in Section 3.1.1 of this safety evaluation. Dependent upon the emergency condition and response needs, the TMI ERO can be augmented by personnel and equipment support from the remainder of the Exelon Generation organization. This support capability is outlined in the emergency plan implementing procedures (EPIP) referenced in Appendix 2 of the PDEP.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP adequately describes the arrangements for requesting assistance from other organizations or individuals in an emergency and that this assistance is supported by letters of agreement. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(3), and the requirements of Section IV.A.7 of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to emergency response support and resources, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.4 Emergency Classification System

Paragraph 50.47(b)(4) of 10 CFR, as exempted for TMI, requires that a licensee's emergency response plan contain:

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, ~~and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.~~

The TMI PDEP identifies that the emergency classification system covers a spectrum of possible radiological and non-radiological emergencies at TMI, considering the permanently shutdown and defueled status of the facility. A graded scale of response for distinct classifications of emergency conditions, actions appropriate for those classifications, and criteria for escalation to a more severe classification are provided. The revised EAL scheme categorizes accidents and/or emergency situations into one of two emergency classification levels (ECLs) depending on emergency conditions at the time of the incident. The ECLs applicable at TMI, considering the permanently shutdown and defueled status of the facility, in order of increasing severity will be a Notification of Unusual Event (Unusual Event) and an Alert. The classification of emergencies up to an Alert is consistent with the regulations for an independent spent fuel storage installation (ISFSI) in 10 CFR 72.32(a)(3) and the exemptions granted to Section IV.C.1 of Appendix E to 10 CFR Part 50, which eliminated the Site Area Emergency and General Emergency classification levels, as described in the NRC's letter dated December 1, 2020.

The TMI EAL scheme, which specifies ECLs of an Unusual Event and Alert, is based on NEI 99-01, Revision 6, as applied to a permanently shutdown and defueled nuclear power reactor with fuel stored onsite in the SFP and ISFSI (when built). When indications are available to on-shift personnel that an EAL threshold has been met, the event is assessed and the corresponding ECL is declared. TMI maintains the capability to assess, classify, and declare an emergency condition within 30 minutes after the availability of indications that an EAL threshold has been reached, consistent with Section IV.C.2 of Appendix E to 10 CFR Part 50, which eliminated the requirement to classify within 15 minutes. Emergency classifications are to be made as soon as conditions are present and recognizable for the classification in accordance with the applicable EALs, but within 30 minutes in all cases after the availability of indications to operators that an EAL threshold has been reached. The initiating conditions, their corresponding EALs, and the technical bases for each classifiable EAL threshold, are contained in Enclosure 3, "Permanently Defueled Emergency Action Levels and Bases Document," to the licensee's letter dated July 1, 2019, as supplemented by letters dated October 9, 2019, February 19, 2020, and November 4, 2020.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP adequately identifies: (1) that the emergency classification system covers a spectrum of possible radiological and non-radiological emergencies at TMI; (2) a graded scale of response for distinct classifications of emergency conditions; (3) actions appropriate for those classifications; and (4) criteria for escalation to a more severe classification. The specific instruments, parameters, or equipment status are described for each emergency classification level in the EAL scheme. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(4), and the requirements of

Sections IV.B.1, B.2, C.1, and C.2 of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to the emergency classification system, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.5 Notification Methods and Procedures

Paragraph 50.47(b)(5) of 10 CFR, as exempted for TMI, requires that a licensee's emergency response plan contain:

Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations ~~and the public~~ has been established; ~~and means to provide early notification and clear instruction to the populace within the plume exposure pathway~~ **Emergency Planning Zone have been established.**

The TMI PDEP identifies the Emergency Director position, which is assumed by the Shift Manager, as responsible for initiating notification to the lead State authority (Pennsylvania Emergency Management Agency), Dauphin and Lancaster Counties, and the NRC, as well as initiating corrective and mitigative actions. Onsite staff are informed of an emergency condition through the use of the plant public address system, office telephone, and/or wireless devices capable of receiving telephone calls and text messages. In the event that personnel required to staff ERO positions are not onsite at the time an emergency is declared, they may be contacted by commercial telephone using land lines and/or wireless devices capable of receiving telephone calls and text messages. Mobilization of the TMI ERO will be conducted under the direction of the Emergency Director, according to personnel assignments and telephone numbers maintained in various telephone directories.

In its supplemental letter dated February 19, 2020, Exelon states,

During the development of the Permanently Defueled Emergency Plan (PDEP), the Commonwealth of Pennsylvania agreed that notification of a declared emergency would occur no later than 30 minutes following classification of an emergency, and that the notification would be made to the lead agency (Pennsylvania Emergency Management Agency (PEMA)). As the lead agency PEMA would implement the Commonwealths Emergency Management Plan and notify the affected counties as appropriate.

...

However emergency response (e.g. Fire Fighting and Emergency Medical) is provided by both Dauphin and Lancaster Counties. Therefore, Exelon is proposing modifying the notification protocol to also include the local agencies (Dauphin and Lancaster Counties), as well as the Lead Agency (PEMA), within 30 minutes. The proposed change is consistent with the current notification performed to risk counties, except for a revision to the affected counties (i.e., Dauphin and Lancaster Counties). The proposed protocol to these counties remains consistent with current protocol, and as noted in the PDEP Attachment 4, PEMA maintains the letters of agreement with the counties.

Notification to PEMA and Dauphin and Lancaster Counties is required within 30 minutes after declaring an emergency, consistent with Section IV.D.3 of Appendix E to 10 CFR Part 50, as exempted, which eliminates the requirement to notify State and local authorities within 15 minutes. The commercial telephone network serves as the primary means to provide initial and updated emergency notifications to State agencies and to provide for general information flow between these agencies. In the event the commercial telephone system is unavailable, wireless communications can be used to make emergency notifications. In addition, electronic means (e.g., computer) may be used to transmit the notification message.

The format and content of the initial message is specified in notification procedures and has been established with the review and agreement of responsible offsite authorities. Under these procedures, the following information may be requested from TMI:

- Date and time of the incident;
- Emergency classification level;
- Status of the facility;
- Whether a release has occurred, is occurring, or is anticipated to occur;
- Actual or projected dose rates at the site boundary; and
- Whether or not offsite assistance is needed.

Follow-up reports are provided as additional information describing the emergency situation becomes available and on an as-needed basis until such time that the emergency condition has been terminated. TMI's emergency classification system and notification messages are reviewed with PEMA and Dauphin and Lancaster Counties authorities on an annual basis.

Communications with the NRC Operations Center will be performed via the NRC Emergency Notification System (ENS) circuit or commercial telephone line. The ENS is a dedicated telephone system in place between the Control Room and the NRC. Notification to the NRC Operations Center is made as soon as possible after State and applicable county notifications and within 60 minutes of event classification or change in classification.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP adequately describes the process for initiating notifications to the NRC and State/local officials and the contents of the emergency messages to be sent. The licensee, in cooperation with the Commonwealth of Pennsylvania, has established mutually agreeable methods and procedures for notification of OROs (as discussed above), consistent with the approved EAL scheme and the contents of the message form. Follow-up reports are provided as additional information describing the emergency situation becomes available and on an as-needed basis until such time that the emergency condition has been terminated. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(5), and the requirements of 10 CFR 50.72(a)(3) and Sections IV.A.6, A.7, C.1, C.2, D.1, D.3, and E of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to notification methods and procedures, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.6 Emergency Communications

Paragraph 50.47(b)(6) of 10 CFR, as exempted for TMI, requires that a licensee's emergency response plan contain:

Provisions exist for prompt communications among principal response organizations to emergency personnel ~~and to the public~~.

Various modes of communication are available to facility staff to transmit information within TMI and to various locations offsite during normal and emergency conditions. There are provisions for 24-hour per day notification to PEMA, Dauphin and Lancaster Counties, and the NRC, for activating the TMI ERO personnel, and for periodic testing of the emergency communication systems. The Emergency Director is responsible for the notification of PEMA, Dauphin and Lancaster Counties, and the NRC and for initiating corrective and mitigative actions when an emergency declaration has been made by TMI. Control Room personnel will assess facility conditions and perform notifications.

Exelon has extensive and reliable communication systems installed at TMI. Examples of the communications systems may include telephone lines, fiber-optic voice channels, cell phones, satellite phones, mobile radio units, handi-talkies, and computers.

The commercial telephone system provides for emergency notification system between TMI and PEMA and Dauphin and Lancaster Counties. It will be used to provide initial and follow-up notifications and for general information flow between these agencies.

In the event that personnel required to staff ERO positions are not onsite at the time an emergency is declared, they may be contacted by commercial telephone, which includes land lines and/or wireless devices capable of receiving telephone calls and text messages.

Communications with the NRC Operations Center will be performed via the NRC ENS circuit or commercial telephone line. This line will be used for event notification and status updates.

Radio communication equipment used during normal facility operations will be used in an emergency to communicate with mobile units and to provide backup to the telephone system.

The facility may also utilize its Facility Warning System, facility radios, and pagers to augment its emergency communications. The Facility Warning System consists of the Facility Emergency Alarm, which provides an immediate warning to onsite personnel, followed by an announcement over the Facility Paging System to provide emergency information such as the emergency classification level declared and immediate warning and instructions to onsite personnel in the event of an emergency (e.g., accountability directions, radiological precautions, etc.). Phone stations and speakers of this subsystem are located in key locations within the facility.

Periodic testing of the emergency communications system is described in Section 11.1.2, "Communication Tests," of the TMI PDEP.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP adequately identifies that provisions exist for prompt communications among principal response organizations to emergency personnel. The

communication methods provide a reliable primary and backup means of communication, and for plant-to-offsite communications with Federal, State, and local agencies. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(6) and the requirements of Sections IV.C.1, D.1, D.3, and E of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to emergency communications, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.7 Public Education and Information

Paragraph 50.47(b)(7) of 10 CFR, as exempted for TMI, requires that a licensee's emergency response plan contain:

~~Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), [T]he principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.~~

The spokesperson function would typically be performed by Exelon Communications personnel, which will be notified of an emergency declaration and would serve as a spokesperson. However, the function could also be performed by plant or corporate management. The spokesperson monitors media activity and coordinates with senior management to address rumors and disseminate information to the public. The spokesperson will participate in news conferences as appropriate with Federal, State, and local response organizations conducted from the site or at other locations, as necessary. The spokesperson is available for media inquiries and the positional duties include maintaining liaison with local media and coordinating with Federal, State, and local response organizations to disseminate appropriate information regarding an emergency at TMI. As part of its normal corporate structure, Exelon maintains a Corporate Communications Office that can be called upon to provide additional resources, as necessary.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP organization includes a communications position that would serve as the licensee's designated spokesperson should an emergency be declared at TMI. The spokesperson is available for media inquiries and the positional duties include maintaining liaison with local media and coordinating with Federal, Commonwealth, and local response organizations to disseminate appropriate information regarding an emergency at TMI. Based on this review, the NRC staff concludes that planning standard 10 CFR Part 50.47(b)(7), as exempted for TMI, pertaining to public education and information, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.8 Emergency Facilities and Equipment

Paragraph 50.47(b)(8) of 10 CFR requires that a licensee's emergency response plan contain:

Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

The TMI PDEP identifies that, following the declaration of an emergency, the activities of the ERO will be coordinated from the Control Room. Control Room personnel will assess facility conditions, evaluate the magnitude and potential consequences of abnormal conditions, initiate preventative, mitigating, and corrective actions, and perform notifications. The Control Room is the onsite center for emergency command and control. The Control Room staff coordinates all phases of emergency response and corrective action required to restore the facility to a safe condition. The Control Room staff's attention focuses on mitigating the emergency as the ERO reports to its designated locations and performs its delegated emergency functions.

When activated, the ERO reports to the Emergency Director to assist the on-shift staff in the assessment, mitigation, and response to an emergency and to support the dispatch of emergency teams. The Control Room contains communications equipment, emergency radiation monitoring equipment, and emergency respiratory devices. Adjacent rooms store RP clothing and other emergency supplies. The Control Room is the general assembly area for emergency mitigation and RP personnel. This is consistent with paragraphs IV.E.8.a(i) and (ii) of Appendix E to 10 CFR Part 50, as exempted, which eliminated the requirement for a separate Technical Support Center and Emergency Operations Facility, as reflected in PDEP Section 5.0, "Emergency Response Facilities and Equipment."

Due to the limited radiological consequences associated with postulated events at a permanently shutdown and defueled power reactor and the limited offsite resources considered to be necessary in an emergency at the site, a designated facility to accommodate State and local staff is no longer required. An onsite facility can provide a place for effective direction and effective control in an emergency. Exelon designated the Control Room as that facility.

Annunciator and computer alarms are provided for a variety of parameters including the SFP Cooling System to indicate SFP level, temperature, and pump status. The manner in which process monitors are used for accident recognition and classification is given in the detailed EAL listings in Addendum 1 to the TMI PDEP.

A number of radiation monitors and monitoring systems are provided on process and effluent liquid and gaseous lines that serve directly or indirectly as discharge routes for radioactive materials. These monitors, which include Control Room readout and alarm functions, exist in order that appropriate action can be initiated to limit fuel damage and/or contain radioactive material. The onsite Radiation Monitoring System contributes to personnel protection, equipment monitoring, data gathering, and accident assessment by measuring and recording radiation levels and concentrations of radioactive material at selected locations within the facility. The data from the following subsystems are displayed by readout in the Control Room: Area Radiation Monitors; Liquid Radiation Monitoring Subsystem; and Atmospheric Radiation Monitoring. Movable airborne monitors are typically used in the spent fuel handling area during fuel handling operations and in the radiochemical laboratory during laboratory sample preparation operations. These monitors are supplemented with various other portable radiation monitors. Each monitor contains three channels for particulate, iodine, and gaseous monitoring, respectively.

The National Weather Service (NWS) provides meteorological information (e.g., wind speed, temperature, and wind direction) from several locations in the vicinity of TMI. This information is available by telephone or the internet. Seismic information can be obtained from the U.S. Geological Survey's National Earthquake Center by telephone or internet. Meteorological data can be remotely interrogated by telephone by the NRC and the Commonwealth of Pennsylvania.

Section 5.0 of the TMI PDEP identifies the general category of equipment and supplies that make up equipment available to assist with emergency response. Section 11.4, "Maintenance and Inventory of Emergency Equipment and Supplies," of the TMI PDEP discusses that the periodic inventory, testing, and calibration of emergency equipment and supplies are conducted in accordance with approved facility procedures. This equipment includes, but is not limited to, portable radiation monitoring equipment, emergency medical response equipment, dosimeters, and portable radios.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-02. The PDEP adequately identifies that during a declared emergency, command and control is maintained in the Control Room. Adequate facilities, equipment, and ERO personnel, which report to the Emergency Director, are available to assess conditions, evaluate the magnitude and potential consequences of abnormal conditions, initiate preventative, mitigating, and corrective actions, and perform onsite and offsite notifications. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(8), and the requirements of Sections IV.E and G of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to emergency facilities and equipment, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.9 Accident Assessment

Paragraph 50.47(b)(9) of 10 CFR, as exempted for TMI, requires that a licensee's emergency response plan contain:

Adequate methods, systems, and equipment for assessing and monitoring actual or potential **offsite** consequences of a radiological emergency condition are in use.

Station procedures provide for preventative and/or corrective actions that mitigate the consequences of events. Instrumentation, control systems, and radiation monitoring systems provide indications related to the safe and orderly implementation of corrective actions. These systems provide indication of SFP storage inventory, temperature, cooling, and supporting systems.

TMI maintains procedures and strategies for the movement of any necessary portable equipment that will be relied upon for mitigating the loss of SFP water. Events involving a loss of SFP cooling and/or water inventory can be addressed by implementation of SFP inventory makeup strategies required under 10 CFR 50.54(hh)(2). These capabilities are maintained in accordance with License Condition 2.c.(17) of the TMI-1 Renewed Facility License. These diverse strategies provide defense in-depth and ample time to provide makeup water or spray to the SFP prior to the onset of zirconium cladding ignition, when considering very low probability beyond-design-basis events affecting the SFP.

The activation of the PDEP and the continued assessment of accident conditions require monitoring and assessment capabilities. TMI maintains and operates onsite monitoring systems needed to provide data that is essential for initiating emergency measures and performing accident assessment, including dose assessment and assessing the magnitude of a release.

TMI has developed a method to quickly determine the projected radiological conditions at the site boundary. During the initial stages of an emergency, the Shift Manager or designated individual is responsible to perform the initial evaluation of radiological conditions. The initial evaluation is accomplished in accordance with site procedures. When augmented, the RP Coordinator assumes responsibility for dose assessment.

Meteorological information (e.g., wind speed, temperature, and wind direction) from several locations in the vicinity of TMI is provided via the NWS. This information is available by telephone or the internet.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Section 5.0 and Section 9.0, "Radiological Assessment and Protective Measures," of the PDEP adequately identify the onsite capabilities and resources available to provide initial and continuing information for accident assessment throughout the course of an event. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(9), and the requirements of Sections IV.A.4, B.1, C.2, and E of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to accident assessment, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.10 Protective Response

Paragraph 50.47(b)(10) of 10 CFR, as exempted for TMI, requires that a licensee's emergency response plan contain:

~~A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.~~

The TMI PDEP identifies the protective actions for station personnel, contractors, and visitors (members of the public) located onsite, and addresses:

- Site personnel accountability;
- Site egress control methods; and
- Contamination control and decontamination capability.

Accountability should be considered and used as a protective action whenever a site-wide risk to health and safety exists and prudence dictates. If personnel accountability is required, at the

direction of the Emergency Director, all individuals at the site (including non-essential employees, visitors, and contractor personnel) shall be notified by the Facility Warning System. Following announcement of an emergency declaration, and when accountability has been requested, facility personnel are responsible for reporting to designated areas and aiding Security in the accountability process. Accountability of all personnel on the site should be accomplished within 60 minutes of the accountability announcement. If personnel are unaccounted for, teams shall be dispatched to locate the missing personnel. Accountability may be modified or suspended if the safety of personnel may be jeopardized by a Security event or other event hazardous to personnel.

All visitors and unnecessary contractors are evacuated from the facility at the discretion of the Emergency Director. In the event of a suspected radiological release, personnel are monitored for radioactive contamination prior to leaving the Protected Area. Portable radiation survey meters are available to monitor for potential contamination.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Section 9.0 of the PDEP adequately identifies the protective actions for onsite personnel, including station personnel, contractors, and visitors (members of the public), and provides that protective equipment and supplies are maintained to support an emergency response. The PDEP also describes that plant evacuees are monitored for radioactive contamination prior to leaving the TMI Protected Area. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(10), and the requirements of Sections IV.B.10, C.1, E, and I of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to protective response, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.11 Radiological Exposure Control

Paragraph 50.47(b)(11) of 10 CFR requires that a licensee's emergency response plan contain:

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

The TMI PDEP states that all reasonable measures are taken to control the radiation exposure to emergency response personnel providing rescue, first aid, decontamination, emergency transportation, medical treatment services, or corrective or assessment actions within applicable limits specified in 10 CFR Part 20. The Shift Manager/Emergency Director has the responsibility to authorize emergency dose commitments in excess of 10 CFR Part 20 limits. This authorization is coordinated with the assistance of the RP Coordinator. Table 9.1, "Emergency Dose Limits," of the TMI PDEP contains the guidelines for emergency exposure criteria, which is consistent with Table 3-1, "Emergency Worker Guidelines," provided in the EPA PAG Manual.

The RP Coordinator is responsible for developing emergency RP programs for ERO and augmented personnel. The RP Coordinator is the individual responsible for the implementation of the RP actions during an emergency. Access to high radiation areas is only permitted with prior approval of the applicable RP Coordinator. Emergency kits are provided with self-reading dosimeters. Each member reporting to the site will be provided a dosimeter of legal record

(DLR). Dose records will be maintained based upon the results of the self-reading dosimeters. This information is cross-referenced with the DLR data. The capability exists for the emergency processing of DLRs on a 24-hour per day basis. Emergency workers are instructed to read self-reading dosimeters frequently and DLRs may be processed with increased periodicity. Emergency worker dose records are maintained by the RP Coordinator (as appropriate) in accordance with the emergency and radiological protection procedures.

During emergency conditions, TMI maintains normal plant decontamination and contamination control measures as closely as possible. However, these measures may be modified by the Emergency Director should conditions warrant. Contamination control measures are maintained to address access control, drinking water and food supplies, and the return of areas and items to normal use in accordance with proper radiation and contamination control techniques. Contamination control criteria for returning areas and items to normal use are contained in the facility procedures.

Contaminated areas are isolated as restricted areas with appropriate RP and access control. Personnel leaving contaminated areas are monitored to ensure that they and their clothing are not contaminated. If contamination above acceptable levels is found, they will be decontaminated in accordance with facility procedures. Supplies, instruments, and equipment that are in contaminated areas, or have been brought into contaminated areas, will be monitored prior to removal. If found to be contaminated, they will be decontaminated using normal facility decontamination techniques and facilities or may be disposed of as radwaste. Contaminated vehicles will be decontaminated before being released. Decontamination is performed under the direction of the RP Coordinator.

Equipment such as respiratory protection gear and protective clothing is assigned to ERO members and facility response personnel in accordance with established facility RP criteria.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Section 9.0 of the PDEP adequately identifies the means for controlling radiological exposures for emergency workers. Emergency worker dose limits are established for designated activities and under specific conditions. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(11), and the requirements of Section IV.E of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to radiological exposure control, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.12 Medical and First Aid Support

Paragraph 50.47(b)(12) of 10 CFR requires that a licensee's emergency response plan contain:

Arrangements are made for medical services for contaminated injured individuals.

The TMI PDEP identifies that TMI maintains on-shift personnel and equipment to provide first aid for personnel working at the site. Arrangements are in place with agencies for prompt ambulance transport of persons with injuries involving radioactivity to designated hospitals. Such service is available on a 24-hour per day basis by letter of agreement and can be contacted directly through commercial phone line from the TMI Control Room or as dispatched by the State Emergency Operations Center.

Arrangements are in place with Hershey Medical Center and Pinnacle Health Harrisburg Hospital for receiving and treating radiologically contaminated or exposed persons from TMI with injuries requiring immediate hospital care. Hospital personnel have been trained and hospitals are equipped to handle injured individuals with radiological contamination or over-exposure. Arrangements are also maintained by letters of agreement with a qualified medical facility, which is well equipped and staffed for dealing with persons having radiation injuries and whenever necessary. Persons will be transferred to this hospital facility for extended specialized treatment.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Section 9.0 of the TMI PDEP adequately identifies that arrangements are maintained for hospital and medical services located in the vicinity of the station, and for prompt ambulance transport of persons with injuries involving radiological contamination to the designated hospital. The licensee also maintains onsite first aid supplies and equipment necessary for the treatment of injured persons with radiological contamination or over-exposure. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(12), and the requirements of Sections IV.A.6 and E of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to medical and first aid support, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.13 Recovery and Reentry

Paragraph 50.47(b)(13) of 10 CFR requires that a licensee's emergency response plan contain:

General plans for recovery and reentry are developed.

TMI identifies that planning for the recovery involves the development of general principles and an organizational capability that can be adapted to any emergency situation. Upon termination of an emergency and transition to the recovery phase, the Emergency Director assembles the recovery organization to address the specific emergency circumstances of the terminated event.

The Emergency Director directs the recovery organization and is responsible for:

- Ensuring the facility is maintained in a safe condition;
- Managing onsite recovery activities during the initial recovery phase; and
- Keeping corporate support apprised of recovery activities and requirements.

The remainder of the recovery is accomplished using the normal facility organization and emergency organizations, as necessary, to provide radiological and technical expertise to the Emergency Director in order to restore the plant to normal conditions. The recovery organization's responsibilities include:

- Maintain comprehensive radiological surveillance of the facility to assure continuous control and recognition of problems;
- Control access to the area and exposure to workers;
- Decontaminate affected areas and/or equipment;
- Conduct clean-up and restoration activities;

- Isolate and repair damaged systems; and
- Document all proceedings of the event and review the effectiveness of the emergency organization in reducing public hazard and/or facility damage.

When facility conditions allow a transition from the emergency phase to the recovery phase, the Emergency Director conducts a plant emergency management meeting to discuss the recovery organization. The actions taken by this organization concerning termination of the emergency proceeds in accordance with a recovery plan developed specifically for the accident conditions.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Section 7.2.4, "Recovery Organization," of the TMI PDEP adequately identifies the general goals for plant recovery and the organizational structure responsible for coordinating response and recovery from emergency conditions at the facility. The licensee's recovery organization will be based on the TMI ERO. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(13), and the requirements of Section IV.H of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to recovery and reentry, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.14 Exercises and Drills

Paragraph 50.47(b)(14) of 10 CFR requires that a licensee's emergency response plan contain:

Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

Section 11.1, "Drills and Exercises," of the TMI PDEP identifies periodic exercises and drills that will be conducted to evaluate major portions of emergency response capabilities and to develop and maintain key emergency response skills. Emergency exercises and drills are conducted to test and evaluate the adequacy of emergency facilities, equipment, procedures, communication channels, actions of emergency response personnel, and coordination between offsite organizations and the facility.

Biennial exercises shall be conducted to test the timing and content of implementing procedures and methods and to ensure that emergency personnel are familiar with their duties. TMI offers the Commonwealth of Pennsylvania, local hospitals, local fire departments, law enforcement, and ambulance service the opportunity to participate to the extent assistance would be expected during an emergency declaration.

At least one drill involving a combination of some of the principal functional areas of emergency response shall be conducted in the interval between biennial exercises.

The TMI PDEP also identified the following periodic drills and tests, which can be performed as part of any drill or exercise:

- Augmentation drills will be conducted semi-annually, which will involve an unannounced, communications drill. Participants provide an estimation of the time it would take to report to their designated ERO position.

- Fire drills will be conducted in accordance with the TMI Fire Protection Program to test and evaluate the response and training of the facility's fire brigade.
- Medical drills will be conducted annually to evaluate the training of the facility's medical response and offsite medical response (ambulance and hospital) and will involve a simulated contaminated injured individual.
- Facility environs and radiological monitoring drills will be conducted annually. These drills include monitoring of accessible areas within the facility and include collection and analysis of airborne sample media, communications, and record keeping performed by members of the emergency team.
- Health Physics drills will be conducted semi-annually involving response to, and analysis of, simulated elevated in-facility airborne and liquid samples and direct radiation measurements in the environment.
- Security drills will be conducted in accordance with the TMI Physical Security Plan. The purpose of the security drill is to maintain key skills, specifically the site-specific team skills necessary to mitigate security-based events.
- Communication channels with PEMA and local agencies (Dauphin and Lancaster Counties) is tested monthly. These communication tests will include the aspect of understanding the content of messages. Communications with the NRC (ENS) is also tested monthly.

Other communication systems, as detailed in Section 6.0, "Communications," of the TMI PDEP, are used on a frequent basis. Therefore, periodic testing of these systems is not considered necessary.

The overall PDEP is maintained by Corporate Emergency Preparedness. The TMI site EP Specialist is assisted by Corporate Emergency Preparedness. The EP Specialist is responsible for an emergency plan drill or exercise. The EP Specialist's responsibilities include developing the exercise/drill scenario, the accident time sequence, and the selection and training of the controllers required to evaluate the effectiveness of the TMI Emergency Preparedness Program. A scenario is prepared by the scenario development team (if needed) for each exercise/drill to be conducted. The drill or exercise scenarios will vary from year to year. The contents of the scenario include, but are not limited to, the following:

- Basic objective(s);
- Date, time period, place, and participating organizations;
- Simulation lists;
- Time schedule of real and simulated events;
- A narrative summary describing the conduct of the drill or exercise to include such items as simulated casualties, search and rescue of personnel, deployment of radiological monitoring teams, and public information affairs; and
- List of controllers and participants.

A critique is conducted at the conclusion of the exercise with facility personnel. After the critique, the controllers submit a written evaluation to the Exercise Coordinator in which the

exercise performance is evaluated against the objectives. All comments and/or recommendations are documented. Weaknesses and/or deficiencies identified in an exercise critique are processed in accordance with the site corrective actions program. In addition, the EP Specialist is responsible for maintaining drill and exercise documentation and to coordinate implementation of corrective actions deemed necessary following drills and exercises.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Section 11.0, "Maintaining Emergency Preparedness," of the PDEP adequately identifies the general goals for exercises and drills, the intent of exercise scenarios, and that exercise and drill performance objectives are evaluated against measurable demonstration criteria. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(14), and the requirements of Sections IV.E.9 and F of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to exercises and drills, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.15 Radiological Emergency Response Training

Paragraph 50.47(b)(15) of 10 CFR requires that a licensee's emergency response plan contain:

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

Per Section 11.2, "Training," of the TMI PDEP, radiological emergency response training is provided to those who may be called on to assist in an emergency. The training program for ERO personnel is based on applicable requirements of Appendix E to 10 CFR Part 50 and position-specific responsibilities as defined in the PDEP. TMI management is responsible to ensure that members of the ERO receive the required initial training and continuing training.

Shift Managers/Emergency Directors, Technical Coordinators, and RP Coordinators shall have training conducted such that proficiency is maintained on the topics listed below. These topics should be covered, as a minimum, on an annual basis:

- EAL classification;
- Dose assessment;
- Federal, State, and local notification procedures;
- ERO augmentation;
- Emergency exposure control; and
- Mitigating strategies for a catastrophic loss of SFP inventory.

TMI personnel available during emergencies to perform emergency response activities as an extension of their normal duties receive duty-specific training. This includes facility on-shift personnel, maintenance, RP, and security personnel. Personnel assigned to liaison with offsite fire departments are trained in accordance with the Fire Protection Program, including mitigating strategies required for a catastrophic loss of SFP inventory.

An overview of the PDEP is given to all personnel allowed unescorted access into the Protected Area at TMI. Personnel receive this information during initial and requalification training. This

training includes identification of the emergency alarm and the fire alarm and the steps to follow for a facility and site evacuation.

Training is offered annually to offsite organizations that may provide specialized services responding onsite during an emergency at TMI (e.g., firefighting, medical services, transport of contaminated and/or injured personnel, etc.). The training shall be structured to meet the needs of that organization with respect to the nature of its support. Topics of event notification, site access, basic radiation protection, and interface activities are included in the training.

TMI procedures outline the process to document training of the TMI ERO. An EPIP is used to verify training provided to designated OROs.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Section 11.2 of the PDEP adequately identifies the level and depth of the emergency preparedness training program to which individuals are to be trained. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(15), and the requirements of Section IV.F of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to radiological emergency response training, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.1.16 Emergency Plan Development and Review

Paragraph 50.47(b)(16) of 10 CFR requires that a licensee's emergency response plan contain:

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Per Section 11.5, "Responsibility for the Planning Effort," of the TMI PDEP, the facility Plant Manager has overall responsibility for implementation of the PDEP at TMI. As discussed previously, the overall PDEP is maintained by Corporate Emergency Preparedness. The TMI site EP Specialist is assisted by Corporate Emergency Preparedness. The specific duties include, but are not limited to, the following: (1) revise and update the Emergency Plan; (2) maintain the EPIPs so that they are updated and current with the PDEP; (3) represent the facility in offsite EP-related interfaces; (4) represent the facility in NRC EP appraisals and audits; and (5) maintain drill and exercise documentation and coordinate implementation of corrective actions deemed necessary following drills and exercises. The EP Specialist is responsible for maintaining an adequate knowledge of regulations, planning techniques, and the latest applications of emergency equipment and supplies.

Per Section 11.3, "Review and Updating of Plan and Procedures," of the TMI PDEP, the PDEP is reviewed at least annually. All recommendations for changes to the PDEP or associated EPIPs are reviewed in accordance with 10 CFR 50.54(q). The Emergency Plan is submitted to TMI's Onsite Safety Review Committee for approval. The emergency classification system and the EALs presented in Addendum 1 of the TMI PDEP are reviewed annually with the applicable state and county authorities.

Written agreements with outside support organizations and governmental agencies are evaluated annually to determine whether these agreements are still valid. If agreements are not valid, then they are renewed and updated.

Revisions to the PDEP are made in accordance with current regulations and guidelines. Changes to the EPIP are forwarded to organizations and individuals with responsibility for implementation of the plan.

Telephone number listings associated with the emergency notification process are verified quarterly.

Per Section 11.4, "Maintenance and Inventory of Emergency Equipment and Supplies," of the TMI PDEP, periodic inventory, testing, and calibration of emergency equipment and supplies will be conducted in accordance with approved facility procedures. This equipment includes, but is not limited to, portable radiation monitoring equipment, emergency medical response equipment, dosimeters, and portable radios. Emergency equipment and instrumentation will be inventoried, inspected, and operationally checked periodically as indicated by the procedure and after each use. Sufficient reserves of equipment and instrumentation will be stocked to replace emergency equipment and instrumentation removed from service for calibration and/or repair.

Based on the NRC staff's review of the TMI PDEP as described above, the NRC staff finds that the proposed PDEP meets the applicable evaluation criteria of NUREG-0654, as outlined in Attachment 1 to NSIR/DPR-ISG-02. Sections 11.3, 11.4, and 11.5 of the PDEP adequately identify responsibility for the issuance, control, and revision/updating of the PDEP, EIPs, and support documents. Based on this review, the NRC staff concludes that planning standard 10 CFR 50.47(b)(16), and the requirements of Section IV.G of Appendix E to 10 CFR Part 50, as exempted for TMI, pertaining to emergency plan development and review, are addressed in an acceptable manner in the TMI PDEP, considering the permanently shutdown and defueled status of the facility.

3.2 Emergency Action Level Scheme

The licensee currently utilizes an EAL scheme based on NEI 99-01, Revision 6, with site-specific modifications due to design issues and/or licensee preference. The licensee is revising its current EAL scheme using the guidance in Section 8, "Independent Spent Fuel Storage Installation (ISFSI) ICs [Initiating Conditions] and EALs," and Appendix C, "Permanently Defueled Station ICs/EALs," of NEI 99-01, Revision 6, as applied to a permanently shutdown and defueled nuclear power reactor with fuel stored onsite in the TMI-1 SFP and in an ISFSI located at the TMI facility (when built), and the possession-only status of TMI-2, with site-specific modifications due to design issues and/or licensee preference.

As discussed in the NRC staff's safety evaluation associated with the exemptions granted to TMI from certain EP planning standards of 10 CFR 50.47 and requirements of Appendix E to 10 CFR Part 50, there are no longer any DBAs at TMI that can result in a radiological release exceeding the EPA early phase PAGs at the exclusion area boundary. Therefore, the NRC staff's assessment of the risks and consequences of a radiological release at TMI, based on the permanently shutdown and defueled condition of the facility, concluded that the risks and consequences are insufficient to warrant a Site Area Emergency or General Emergency classification levels. As a result, the only ECLs applicable to the TMI facility are an Unusual Event or an Alert.

In its letter dated July 1, 2019, Exelon submitted its proposed EAL scheme for TMI to reflect a permanently shutdown and defueled condition, along with its technical basis and the EAL numbering scheme. The proposed EAL scheme is unique to TMI, as it contains site-specific designations and descriptions.

The NRC staff verified that the proposed EAL scheme is consistent with the guidance provided in Section 8 and Appendix C to NEI 99-01, Revision 6, to ensure that the EAL scheme meets the standards of 10 CFR 50.47(b)(4) and requirements of Section IV.B of Appendix E to 10 CFR Part 50, as exempted, for a permanently shutdown and defueled nuclear power reactor with spent fuel stored onsite in the TMI-1 SFP and in an ISFSI at the TMI facility (when built), and the possession-only status of TMI-2. The NRC staff reviewed the proposed EAL scheme, technical basis, comparison matrix, and all additional information provided and found that the proposed EAL scheme has site-specific modifications from the NEI 99-01, Revision 6, guidance due to specific plant designs and licensee preference.

The NRC staff verified that the instrumentation and setpoints derived for the proposed EAL scheme are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme.

Although the EALs must be plant-specific, to ensure consistency and regulatory stability, the NRC staff reviewed the proposed EAL scheme with respect to the key characteristics, listed below, of an effective EAL scheme found in the NRC-endorsed guidance of NEI 99-01, Revision 6.

- Consistency, including standardization of intent, if not in actual wording (i.e., the EALs would lead to similar decisions under similar circumstances at different plants);
- Human factors engineering and user friendliness;
- Potential for emergency classification level upgrade only when there is an increasing threat to public health and safety;
- Ease of upgrading and downgrading the ECL;
- Thoroughness in addressing and disposing of the issues of completeness and accuracy raised in Appendix 1 to NUREG-0654 (i.e., the EALs are unambiguous and are based on site-specific indicators);
- Technical completeness for each ECL;
- Logical progression in classification for multiple events; and
- The use of objective and observable values.

The TMI EAL technical basis document is an integral part of the EAL scheme. The material in this document supports proper emergency classification decision-making by providing background and development information in a readily accessible format, which can be referred to in training situations and when making an actual emergency classification, if necessary. The document is also useful for establishing configuration management controls for emergency preparedness-related equipment and explaining an emergency classification to offsite authorities.

To aid in understanding the nomenclature used in this safety evaluation, the proposed EAL scheme for TMI includes two ECLs: Unusual Event (U) and Alert (A). Initiating conditions (ICs) for entry into each of the two ECLs are specified for conditions relating to:

- Abnormal Radiation Levels/Radiological Effluent (PD-A (PD-R at TMI)). “A” is replaced with “R” at TMI to better signify a radiological event and to maintain continuity with the previous TMI emergency action level scheme;
- Hazards and Other Conditions Affecting Plant Safety (PD-H);

- System Malfunction (PD-S (PD-M at TMI)). “S” is replaced with “M” at TMI to better signify a malfunction and to maintain continuity with the previous TMI action level scheme; and
- Hazards and Other Conditions Affecting ISFSI (E-H).

This safety evaluation uses the numbering system from the proposed plant-specific EAL scheme, which is consistent with the numbering system from the generic EAL scheme development guidance contained in NEI 99-01, Revision 6. The NRC staff verified that the numbering, sequencing, formatting, logical progression, and ease of upgrading/downgrading for these EALs are consistent with the overall EAL scheme development guidance and address the plant-specific implementation strategies provided, and are, therefore, consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

For each IC, specific EAL threshold values are identified that would require the declaration of an ECL. The EAL scheme is intended to provide multiple and diverse threshold values for an Unusual Event and Alert to ensure accurate classification and timely declaration.

TMI made changes to the generic EAL scheme, throughout the proposed EAL scheme, as follows:

- Changed “Notification of Unusual Event” to “Unusual Event” to maintain continuity with the previous TMI EAL scheme;
- Removed operating mode applicability as it does not apply in a permanently defueled condition;
- Removed Emergency Classification Level (ECL) information;
- Added Recognition Category (“Category”);
- Changed “Initiating Condition” to IC/EAL Identifier;
- Revised references to “plant” to “facility” to indicate that TMI is no longer an operating nuclear power plant;
- Removed “Example” from EALs since they are no longer examples; and
- Added site-specific basis information.

The NRC staff determined that these changes are administrative in nature and, as such, acceptable, since they do not impact the overall EAL scheme.

An evaluation of the acceptability of the proposed EAL scheme is provided in the following sections.

3.2.1 Category “PD-R”: Abnormal Radiation Levels/Radiological Effluent

3.2.1.1 EAL PD-RU1, “Release of gaseous or liquid radioactivity greater than 2 times the Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer”

This EAL addresses a potential or actual decrease in the level of safety of the plant, as indicated by a low-level radiological release that exceeds regulatory commitments for an extended period of time (e.g., an uncontrolled release). It includes any gaseous or liquid radiological release, monitored or unmonitored, including those for which a radioactivity discharge permit is normally prepared.

The NRC staff verified that the TMI implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Inserted ODCM as the site-specific effluent release controlling document;
- Provided additional provision for classification based on effluent monitor readings;
- Changed format of EALs to separate EALs 1 and 2 into distinct EALs;
- EAL 1: Specified that the effluent monitors are the “discharge permit specified monitor”;
- EAL 1: Did not include list of site-specific effluent radiation monitors since they may change throughout the decommissioning. Releases will be controlled through approved discharge permits which will specify monitors and monitor setpoints prior to release;
- Added “OR” to reflect the EAL conditions that represent entry into the classification;
- Added EAL 2 regarding Station Vent monitor as the remaining permanently monitored effluent pathway to determine entry threshold; and
- EAL 3 renumbered (NEI 99-01 EAL 2). Provided additional provisions for using sample analysis results of a gaseous or liquid release as an action level.

For the site-specific change to reference the ODCM, the NRC staff verified that TMI implemented the developer notes for identifying the site-specific effluent release controlling document identified in NEI 99-01, Revision 6, as the basis for this specific EAL. The other site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

In the supplemental letter dated November 4, 2020, Exelon provided a revised setpoint value for EAL 2 due to performing a new calculation of based on a change to the isotopic mix due to radioactive decay following the permanent shutdown of TMI-1. Exelon also proposes to use the RM-A-8G (low range gas monitor), in lieu of the RM-A-8GH (extended high range gas monitor) because the calculated threshold would be below the RM-A-8GH monitor background count of 35 counts per minute. Exelon further provides that the calculated EAL 2 threshold value corresponding to two times the ODCM limit value is $5.43E+06$ cpm, which is greater than the scale for RM-A-8G, so consistent with the guidance in NEI 99-01, Revision 6, the threshold value will be established at 95% of the full range of RM-A-8G. The NRC staff finds that these changes provided in the supplemental letter are acceptable.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.1.2 EAL PD-RA1, “Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mRem [millirem] TEDE [total effective dose equivalent] or 50 mRem thyroid CDE [committed dose equivalent]”

This EAL addresses a release of gaseous or liquid radioactivity that results in projected or actual offsite doses greater than or equal to 1 percent of the EPA early phase PAGs. It includes both monitored and unmonitored releases. Releases of this magnitude represent an actual or potential substantial degradation of the level of safety of the plant as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant, uncontrolled release).

The NRC staff verified that TMI’s implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Modified EAL numbering and separated EALs 1, 2, 3, and 4 into EAL flowchart format;
- Provided additional provision for classification based on effluent monitor readings. Moved information from Bases to Notes;
- Added appropriate installed radiation monitor;
- Added “site boundary” as the site-specific dose receptor point; and
- Added “OR” to reflect the EAL conditions that represent entry into the classification.

The site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

In the supplemental letter dated November 4, 2020, Exelon provided a revised setpoint value for EAL 1 due to performing a new calculation of based on a change to the isotopic mix due to radioactive decay following the permanent shutdown of TMI-1. The NRC staff finds that this change provided in the supplemental letter is acceptable.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.1.3 EAL PD-RU2, “UNPLANNED rise in facility radiation levels”

This EAL is based upon site-specific indications of increased plant radiation levels caused by a decrease in water level above irradiated (spent) fuel. The increased radiation levels are indicative of a minor loss in the ability to control radiation levels within the plant. This condition is a potential degradation in the level of safety of the plant.

The NRC staff verified that TMI’s implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Modified EAL numbering and separated EALs 1 and 2 into EAL flowchart format;
- Added “OR” to reflect the EAL conditions that represent entry into the classification;
- Provided site-specific level indication that corresponds to fuel pool level entry condition into Spent Fuel Pool abnormal operating procedure; and
- Provided Area Radiation Monitoring for specific location.

The site-specific changes to EAL PD-RU2 are in accordance with the guidance provided in NEI 99-01, Revision 6, for this specific EAL. The developer notes in NEI 99-01, Revision 6, provide that the site-specific indications may include instrumentation values, such as water level, area radiation monitor readings, and personnel reports. These indications are installed plant equipment with indications in the control room that provide timely indication for classifying this EAL. Therefore, the SFP low-level alarm monitors are acceptable site-specific indications of increased plant radiation levels caused by a decrease in water level above irradiated (spent) fuel. The licensee provides that besides a water level loss being primarily determined by indications from available level instrumentation, other sources of level indications may include report of an unplanned drop in water level. A significant drop in the water level may also cause an increase in the radiation levels of adjacent areas that can be detected by area radiation monitors in those locations or survey results. The other site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.1.4 EAL PD-RA2, “UNPLANNED rise in plant radiation levels that impedes plant access required to maintain spent fuel integrity”

This EAL addresses increased radiation levels that impede necessary access to areas containing equipment that must be operated manually or that require local monitoring in order to maintain systems needed to maintain spent fuel integrity. As used here, “impede” includes hindering or interfering, provided that the interference or delay is sufficient to significantly threaten necessary plant access. As such, it represents an actual or potential substantial degradation of the level of safety of the plant.

The Alert classification level for this EAL is primarily intended to ensure that the TMI ERO is activated to support on-shift personnel in removing the impediment to normal access to maintaining spent fuel integrity.

The NRC staff verified that TMI’s implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Changed format of EALs to separate EALs 1 and 2 into distinct EALs;
- Added “OR” to reflect the EAL conditions that represent entry into the classification; and
- Added site-specific areas to EALs 1 and 2 and maintained additional site-specific basis wording consistent with the previous wording in the basis for TMI EAL PD-RA3, revised to reflect the shutdown and defueled condition of the facility.

For the site-specific changes to EAL PD-RA2, the developer notes in NEI 99-01, Revision 6, provide that the list should include all areas requiring continuous occupancy to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity. The list that TMI provided includes five facility areas that are needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity. The other site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.2 Category “PD-H”: Hazards and Other Conditions Affecting Plant Safety

3.2.2.1 EAL PD-HU1, “Confirmed SECURITY CONDITION or threat”

This EAL is based upon any security-related event listed in the approved TMI Physical Security Plan that constitutes a threat/risk to site personnel or a potential degradation to the level of safety of the plant.

The NRC staff verified that TMI’s implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Station Security Force is provided as the site-specific security shift supervision;
- Changed format and order of EALs to separate EALs 1, 2, and 3 into distinct EAL ICs;
- Added “OR” to reflect the EAL conditions that represent entry into the classification;
- Added security procedure to aid determining the notification of a credible event; and
- Basis paragraph regarding Security-sensitive information was not included based on it being more relevant for EAL developers (same paragraph is in the Developer Notes) than end users.

The site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.2.2 EAL PD-HA1, "HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes"

This EAL addresses the occurrence of a hostile action within the Owner Controlled Area or notification of an aircraft attack threat. This event will require rapid response and assistance due to the possibility of the attack progressing to the protected area, or the need to prepare the plant and staff for a potential aircraft impact.

The NRC staff verified that TMI's implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Changed format and order of EALs to separate EALs 1 and 2 into distinct EALs;
- Added "OR" to reflect the EAL conditions that represent entry into the classification;
- Station Security Force is identified as the site-specific security shift supervision; and
- Basis paragraph regarding Security-sensitive information was not included based on it being more relevant for EAL developers (same paragraph is in the Developer Notes) than end users.

The site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.2.3 EAL PD-HU2, "Hazardous event affecting equipment necessary for spent fuel cooling"

This EAL is based upon the effect that natural and destructive hazards may have on at least one train of a safety system needed for spent fuel cooling. The damage must be of sufficient magnitude that the system(s) train cannot, or potentially cannot, perform its design function. This condition reduces the margin to a loss, or potential loss, of the fuel clad barrier and, therefore, represents a potential degradation of the level of safety.

The NRC staff verified that TMI's implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Removed "SAFETY SYSTEM" as the term is not applicable in the permanently shut down and defueled condition and revised to clarify that the EAL applies to systems, components, or equipment that are needed for spent fuel cooling;
- Changed numbering format of EALs; and
- Clarified Basis discussion for EAL 1. c) to more closely represent the wording of the EAL.

The licensee provided that this IC addresses a hazardous event that causes damage to at least one train of equipment needed for spent fuel cooling. The damage must be of sufficient magnitude that the system(s) train cannot, or potentially cannot, perform its intended function. This condition reduces the margin to a loss, or potential loss, of the fuel clad barrier, and therefore, represents a potential degradation of the level of safety of the facility. The term "SAFETY SYSTEM" was removed, as the term is not applicable in the permanently shutdown and defueled condition. The IC language continues to focus on a hazardous event affecting equipment necessary for spent fuel cooling. The other site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.2.4 EAL PD-HU3, "Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Unusual Event"

This EAL is based upon providing EALs to consider when the decision-maker's judgment deems an emergency declaration is warranted, based on the definition and intent of the ECL.

The NRC staff verified that TMI's implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Removed "safety systems" as the term is not applicable in the permanently shutdown and defueled condition and revised to clarify that the EAL applies to systems, components, or equipment that are needed for spent fuel cooling; and
- Removed number from EAL since it's a single EAL.

The site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.2.5 EAL PD-HA3, "Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert"

This EAL is based upon providing EALs to consider when the decision-maker's judgment deems an emergency declaration is warranted, based on the definition and intent of the ECL.

The NRC staff verified that TMI's implementation of this EAL, except for the site-specific change identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific change to the generic EAL scheme:

- Removed number from EAL since it's a single EAL.

The site-specific change to the generic EAL scheme is administrative and does not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.3 Category "PD-M": System Malfunction

3.2.3.1 EAL PD-MU1, "UNPLANNED spent fuel pool temperature rise"

This EAL is based upon a loss of the ability to maintain SFP cooling and addresses a condition that is a precursor to a more serious event and represents a potential degradation in the level of safety of the facility. If uncorrected, boiling could occur and result in a loss of water inventory and increased radiation levels.

The NRC staff verified that TMI's implementation of this EAL, except for the site-specific change identified below, is consistent with the guidance provided in Appendix C to NEI 99-01, Revision 6.

The licensee made the following site-specific change to the generic EAL scheme:

- Added site-specific temperature of "160°F" and justification in the Basis.

The site-specific change to the generic EAL scheme is administrative and does not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in

Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.2.4 Category "E": ISFSI Malfunction

3.2.4.1 E-HU1, "Damage to a loaded cask CONFINEMENT BOUNDARY"

This EAL addresses an event that results in damage to the confinement boundary of a storage cask containing spent fuel. It applies to irradiated fuel that is licensed for dry storage, beginning at the point that the loaded storage cask is sealed. The issues of concern are the creation of a potential or actual release path to the environment, degradation of one or more fuel assemblies due to environmental factors, and configuration changes, which could cause challenges in removing the cask or fuel from storage.

A spent fuel storage license contains technical requirements and operating conditions (fuel specifications, cask leak testing, surveillance, and other requirements) for the ISFSI and specifies what the licensee is authorized to store at the site.

The NRC staff verified that TMI's implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in Section 8 to NEI 99-01, Revision 6.

The licensee made the following site-specific changes to the generic EAL scheme:

- Removed numbering from EAL since it's a single EAL;
- The Basis sentence beginning with the phrase "The word cask" is provided for clarification; and
- Used generic reference which will be addressed in the ISFSI Technical Specifications.

The site-specific changes to the generic EAL scheme are administrative and do not affect the applicability of the EAL.

Based on the above, the NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme (identified in Section 3.2 of this safety evaluation) and meets the planning standard of 10 CFR 50.47(b)(4) and the requirements of Section IV.B of Appendix E to 10 CFR Part 50. Therefore, the NRC staff finds this EAL acceptable.

3.3 Conclusions

3.3.1 Emergency Plan Conclusions

Based on the NRC staff's review of the proposed TMI PDEP, as described in Section 3.1 of this safety evaluation, the NRC staff finds that the proposed PDEP meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50, as exempted. The TMI PDEP provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at TMI after the docketing of the certifications of permanent cessation of operations and removal of fuel for TMI-1 and the possession-only status of TMI-2. Therefore, the NRC staff concludes that the licensee's proposed TMI PDEP, as

provided in Attachment 2 to the licensee's letter dated July 1, 2019, as supplemented by the letters dated October 9, 2019, February 19, 2020, and November 4, 2020, is acceptable.

3.3.2 Emergency Action Level Scheme Conclusions

The NRC staff has reviewed the technical basis for the proposed EAL scheme for TMI in the permanently shutdown and defueled condition, the modifications from NEI 99-01, Revision 6, and the licensee's evaluation of the proposed changes. Exelon chose, in part, to modify its EAL scheme from the generic EAL scheme development guidance provided in NEI 99-01, Revision 6, in order to adopt a format more in alignment with its currently approved EAL scheme, as well as alignment with licensee-specific writer's guides and preferences. The NRC staff determined that these modifications are administrative in nature and do not alter the intent of any specific EAL within an EAL, EAL category, or within the entire EAL scheme as stated in NEI 99-01, Revision 6.

The NRC staff determined that the proposed EAL scheme uses objective and observable values, is worded in a manner that addresses human factors engineering and user friendliness concerns, follows logical progression for escalating events, and allows for event downgrading and upgrading based upon the potential risk to the public health and safety. Risk assessments were appropriately used to set the boundaries of the emergency classification levels and ensure that all EALs that trigger emergency classification are in the same range of relative risk.

Based on the above and the NRC staff's review as described in Section 3.2 of this safety evaluation, the NRC staff has determined that the proposed changes meet the guidance in NEI 99-01, Revision 6, the planning standard of 10 CFR 50.47(b)(4), and the requirements in Section IV.B of Appendix E to 10 CFR Part 50, as exempted for TMI. Therefore, the NRC staff concludes that the proposed EAL scheme, as provided in Attachment 3 to the licensee's letter dated July 1, 2019, as supplemented by letters dated October 9, 2019, February 19, 2020, and November 4, 2020, is acceptable, and provides reasonable assurance that the licensee can and will take adequate protective measures in the event of a radiological emergency.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Commonwealth of Pennsylvania official was notified of the proposed issuance of the amendment on September 17, and October 8, 2020. The Commonwealth of Pennsylvania official commented that the State would continue current environmental surveillance and emergency response requirements until all spent fuel is in dry cask storage. At that time, the State would evaluate the scope of its environmental surveillance program but would maintain an emergency response capability until all spent fuel is removed from the site.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment relates, in part, to changes in recordkeeping, reporting, or administrative procedures or requirements. The amendment also relates, in part, to changing requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 because the amendment approves an acceptable EAL scheme which is required for operation of the facility. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a

proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on September 10, 2019 (84 FR 47548). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and 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 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The NRC staffs proposed no significant hazards consideration determination related to the license amendment request was published in the *Federal Register* on September 10, 2019 (84 FR 47548). On November 12, 2019, Eric J. Epstein (Epstein) and Three Mile Island Alert, Inc. (TMIA) filed a request for a hearing on the license amendment request (ADAMS Package Accession No. ML19329D040). On January 23, 2020, the Atomic Safety and Licensing Board (Board) issued a Memorandum and Order denying the hearing request (ADAMS Accession No. ML20023A305). On February 16, 2020, Epstein and TMIA appealed the Board's decision to the Commission (ADAMS Accession. No. ML20047A004). On October 8, 2020, the Commission issued a Memorandum and Order affirming the Board's decision (ADAMS Accession No. ML20282A598).

Under the Atomic Energy Act of 1954, as amended, and the NRC's regulations, the NRC staff may issue and make an amendment immediately effective, notwithstanding the pendency before the Commission of a request for a hearing from any person, in advance of the holding and completion of any required hearing, where it has made a final determination that no significant hazards consideration is involved.

The NRC's regulation in 10 CFR 50.92(c) states that the NRC may make a final determination, under the procedures in 10 CFR 50.91, that a license amendment involves no significant hazards consideration if operation of the facility, in accordance with the amendment, would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

As required by 10 CFR 50.91(a), the licensee provided its analysis of the issue of no significant hazards consideration, which is presented below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed changes to the site emergency plan (SEP) and EAL scheme do not impact the function of plant structures, systems, or components (SSCs). The proposed changes do not affect accident initiators or precursors, nor does it alter design assumptions. The proposed changes do not prevent the ability of the on-shift staff and emergency response organization (ERO) to perform their intended functions to mitigate the consequences of any accident or event that will be credible in the permanently defueled condition.

The probability of occurrence of previously evaluated accidents is not increased, since most previously analyzed accidents can no longer occur and the probability of the few remaining credible accidents are unaffected by the proposed amendment.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes reduce the scope of the SEP and EAL scheme commensurate with the hazards associated with a permanently shutdown and defueled facility. The proposed changes do not involve installation of new equipment or modification of existing equipment, so that no new equipment failure modes are introduced. In addition, the proposed changes do not result in a change to the way that the equipment or facility is operated so that no new or different kinds of accident initiators are created.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public. The proposed changes are associated with the SEP and EAL scheme and do not impact operation of the plant or its response to transients or accidents. The change does not affect the Technical Specifications. The proposed changes do not involve a change in the method of plant operation, and no accident analyses will be affected by the proposed changes. Safety analysis acceptance criteria are not affected by the proposed changes. The Post Defueled Emergency Plan (PDEP) will continue to provide the necessary response staff with the appropriate guidance to protect the health and safety of the public.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

The NRC staff reviewed the licensee's no significant hazards consideration determination. Based on this review and on the staff's evaluation of the underlying license amendment request as discussed above, the NRC staff concludes that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff has made a final determination that no significant hazards consideration is involved for the proposed amendment and that the amendment should be issued as allowed by the criteria contained in 10 CFR 50.91.

7.0 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. Gallagher, M. 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 Permanently Defueled Emergency Plan and Emergency Action Level Scheme," dated July 1, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19182A182).
2. Gallagher, M. P., Exelon Generation Company, LLC, letter to U.S. Nuclear Regulatory Commission, "Supplement to Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR Part 50, Appendix E and License Amendment Request for Proposed Changes to the Three Mile Island Emergency Plan for Permanently Defueled Emergency Plan and Emergency Action Level Scheme," dated October 9, 2019 (ADAMS Accession No. ML19282C285).
3. Gallagher, M. P., Exelon Generation Company, LLC, letter to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information Related to License Amendment Request for Proposed Changes to the Three Mile Island Nuclear Station Permanently Defueled Emergency Plan and Emergency Action Level Scheme," dated February 19, 2020 (ADAMS Accession No. ML20050N441).
4. Gallagher, M. 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 and Emergency Action Level Scheme for the Permanently Defueled Condition," dated November 4, 2020 (ADAMS Accession No. ML20311A657).
5. U.S. Nuclear Regulatory Commission, "Staff Requirements SECY-20-0041, 'Request by Exelon Generation Company, LLC for Exemptions from Certain Emergency Planning Requirements for the Three Mile Island Nuclear Station,'" dated July 27, 2020 (ADAMS Accession No. ML20209A439).
6. Nuclear Energy Institute, NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated November 2012 (ADAMS Accession No. ML12326A805).
7. Fewell, J. B., 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 (ADAMS Accession No. ML17171A151)

8. Gallagher, M. P., Exelon Generation Company, LLC, letter to U.S. Nuclear Regulatory Commission, "Certification of Permanent Removal of Fuel from the Reactor Vessel for Three Mile Island Nuclear Station, Unit 1," dated September 26, 2019 (ADAMS Accession No. ML19269E480).
9. Smith, T., U.S. Nuclear Regulatory Commission, letter to Bryan Hanson, Exelon Generation Company, "Three Mile Island Nuclear Station, Units 1 and 2 - Exemptions from Certain Emergency Planning Requirements and Related Safety Evaluation", dated December 1, 2020 (ADAMS Accession No. ML20244A293).
10. U.S. Environmental Protection Agency, EPA-400/R-17/001, "PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents," dated January 2017 (ADAMS Accession No. ML17044A073).
11. Federal Emergency Management Agency, Comprehensive Preparedness Guide 101, "Developing and Maintaining Emergency Operations Plans," Version 2.0, dated November 2010 (http://www.fema.gov/pdf/about/divisions/npd/CPG_101_V2.pdf).
12. U.S. Nuclear Regulatory Commission, "SECY-20-0041, 'Request by Exelon Generation Company, LLC for Exemptions from Certain Emergency Planning Requirements for the Three Mile Island Nuclear Station,'" dated May 5, 2020 (ADAMS Package Accession No. ML19311C762).
13. U.S. Nuclear Regulatory Commission and Federal Emergency Management Agency, NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 1980 (ADAMS Accession No. ML040420012).
14. U.S. Nuclear Regulatory Commission, "NSIR/DPR-ISG-02, Interim Staff Guidance, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," dated May 11, 2015 (ADAMS Accession No. ML14106A057).
15. Thaggard, M., U.S. Nuclear Regulatory Commission, letter to Susan Perkins-Grew, Nuclear Energy Institute, "U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, dated November 2012 (TAC No. D92368)," dated March 28, 2013 (ADAMS Accession No. ML12346A463).

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