



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

December 27, 2023

Jean A. Fleming
Vice President, Licensing,
Regulatory Affairs, and PSA
Holtec International, LLC
Krishna P. Singh Technology Campus
1 Holtec Boulevard
Camden, NJ 08104

SUBJECT: PALISADES NUCLEAR PLANT—ISSUANCE OF AMENDMENT NO. 274
REGARDING THE LICENSE AMENDMENT REQUEST FOR CHANGES TO
THE PERMANENTLY DEFUELED EMERGENCY PLAN AND PERMANENTLY
DEFUELED EMERGENCY ACTION LEVEL SCHEME (EPID: L-2022-LLA-0099)

Dear Jean Fleming:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 274 to Renewed Facility Operating License No. DPR-20 for the Palisades Nuclear Plant (Palisades). This amendment consists of changes to Palisades' license in response to your application dated July 12, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22193A090), as supplemented by letter dated November 8, 2022 (ML22312A451).

The amendment revises the Palisades Post-Shutdown Emergency Plan and emergency action level scheme to reflect the permanently defueled condition following a sufficient decay of the spent fuel, such that the risk of an offsite radiological release is significantly lower and the types of possible accidents are significantly fewer.

A copy of the related safety evaluation is also enclosed. The Commission's monthly *Federal Register* notice will include a notice of issuance.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's ADAMS. ADAMS is accessible from the NRC website at <https://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning the above, please contact me at (301) 415-1387 or by email to Tanya.Hood@nrc.gov.

Sincerely,

/RA/

Tanya E. Hood, Project Manager
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No. 50-255

Enclosures:

1. Amendment No. 274 to Renewed
Facility Operating License No. DPR-20
2. Safety Evaluation

cc w/enclosures: Palisades ListServ

SUBJECT: PALISADES NUCLEAR PLANT - ISSUANCE OF AMENDMENT NO. 274
REGARDING THE LICENSE AMENDMENT REQUEST FOR CHANGES TO
PERMANENTLY DEFUELED EMERGENCY PLAN AND PERMANENTLY
DEFUELED EMERGENCY ACTION LEVEL SCHEME (EPID: L-2022-LLA-0099)
DATED December 27, 2023

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DATE	09/05/2023	09/27/2023	10/10/2023
OFFICE	NRR/DRA/ARCB/BC	NRR/DSS/SCP/BC	NMSS/DUWP/RDB/BC
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DATE	11/15/2023	11/22/2023	12/22/2023
OFFICE	OGC – NLO	ADM/DRMA	NMSS/DUWP/RDB/PM
NAME	ACoggins	JDougherty	THood
DATE	12/13/2023	12/18/2023	12/22/2023
OFFICE	NMSS/DUWP/DD	NMSS/D	
NAME	JMarshall	JLubinski	
DATE	12/22/2023	12/27/2023	

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

HOLTEC PALISADES, LLC

HOLTEC DECOMMISSIONING INTERNATIONAL, LLC

DOCKET NO. 50-255

PALISADES NUCLEAR PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 274
Renewed License No. DPR-20

1. The U.S. Nuclear Regulatory Commission (NRC, the Commission) has found the following:
 - A. The application for amendment filed by Holtec Decommissioning International, LLC (HDI), on behalf of Holtec Palisades, LLC, dated July 12, 2022, as supplemented by letter dated November 8, 2022, 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, "Nuclear Regulatory Commission;"
 - B. The facility will be maintained in conformity with the application, as amended; 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 amended license 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 set forth in 10 CFR Chapter I;
 - 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;
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the Commission's regulations, and all applicable requirements have been satisfied.
2. Accordingly, by Amendment No. 274, Renewed Facility Operating License No. DPR-20 is hereby amended to authorize revision to the Palisades Nuclear Plant (Palisades) Post-Shutdown Emergency Plan and emergency action level scheme as set forth in the HDI application dated July 12, 2022, as supplemented by letter dated November 8, 2022, and as discussed in the NRC staff's safety evaluation for this amendment.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from that date.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Date of Issuance: December 27, 2023



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. 274 TO
RENEWED FACILITY OPERATING LICENSE NO. DPR-20
HOLTEC DECOMMISSIONING INTERNATIONAL, LLC,
AND HOLTEC PALISADES, LLC,
PALISADES NUCLEAR PLANT
DOCKET NO. 50-255

1.0 INTRODUCTION

By application dated July 12, 2022,¹ as supplemented by letter dated November 8, 2022,² Holtec Decommissioning International, LLC (HDI), one of the licensees of the Palisades Nuclear Plant (Palisades) and an indirect wholly owned subsidiary of Holtec International (Holtec), on behalf of Holtec Palisades, LLC (Holtec Palisades), the other licensee for the Palisades Nuclear Plant (Palisades), requested changes to the Palisades site emergency plan and the Palisades emergency action level (EAL) scheme. These changes are consistent with the U.S. Nuclear Regulatory Commission (NRC, the Commission) approval of related emergency planning and preparedness (EP) exemptions, which was based on the Commission's approval of the licensees' EP exemptions as documented in Staff Requirements Memorandum (SRM)-SECY-23-0043, "Staff Requirements—SECY-23-0043—Request by Holtec Decommissioning International, LLC for Exemptions from Certain Emergency Planning Requirements for Palisades Nuclear Plant," dated December 7, 2023.³

Attachment 1, "Permanently Defueled Emergency Plan," of the licensee's application dated July 12, 2022, contained a copy of Revision 0 of the proposed Palisades permanently defueled emergency plan (PDEP). Attachment 2, "Permanently Defueled EAL Technical Bases Document," contained an EAL scheme, including a description and evaluation of the proposed changes and revisions. Attachment 3 contained a comparison matrix to the EAL scheme provided in the Nuclear Energy Institute (NEI) document NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," issued November 2012.⁴

¹ Agencywide Documents Access and Management System Accession No. ML22193A090

² ML22312A451

³ ML23341A181

⁴ ML12326A805

The supplemental letter dated November 8, 2022, provided additional information that clarified but did not expand the scope of the application as originally noticed, or change the NRC's original proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on September 6, 2022 (87 FR 54550).

1.1 Background

The Palisades site is located in Covert Township, Van Buren County, Michigan. The plant is bordered to the north by the Van Buren State Park and to the west by Lake Michigan. Areas to the south and east of Palisades are sparsely populated, underdeveloped, or used for farming. Interstate 196 and the Blue Star Highway lie within 1 mile east of the site. The area around the site is devoted mostly to recreation and tourism, which produce a fluctuating and seasonal population.

By letter dated January 4, 2017,⁵ pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.82(a)(1)(i) and 10 CFR 50.4(b)(8), Entergy Nuclear Operations, Inc. (ENOI), certified to the NRC that it had decided to permanently cease power operations at the Palisades facility by October 1, 2018. By letters dated September 28, 2017,⁶ and October 19, 2017,⁷ ENOI updated its timeline and certified to the NRC that it planned to permanently cease power operations at Palisades by May 31, 2022.

By application dated December 23, 2020,⁸ as supplemented by information provided in two letters dated December 23, 2020,^{9,10} and a letter dated October 29, 2021,¹¹ ENOI, Entergy Nuclear Palisades, LLC, Holtec, and HDI submitted an "Application for Order Consenting to Transfers of Control of Licenses and Approving Conforming License Amendments" requesting transfer of the Palisades license to HDI, one of the licensees of Palisades and an indirect wholly owned subsidiary of Holtec on behalf of Holtec Palisades, the other licensee for Palisades (hereinafter collectively referred to as the licensee).

By letter dated December 13, 2021, the NRC issued an order consenting to the license transfer and draft conforming administrative license amendments.¹² The license transfer was executed on June 28, 2022,¹³ coinciding with the transition of Palisades from an operational to a decommissioning status.

Palisades ceased operations on May 20, 2022, and all fuel was removed from the Palisades reactor vessel on June 10, 2022. Under 10 CFR 50.82(a)(1)(ii), by letter dated June 13, 2022,¹⁴ the licensee certified to the NRC that the fuel had been permanently removed from the Palisades reactor vessel and placed in the spent fuel pool (SFP) on June 10, 2022. Upon the docketing of these certifications, under 10 CFR 50.82(a)(2), the Palisades renewed facility operating license no longer authorized operation of the reactors or emplacement or retention of

5 ML17004A062
6 ML17271A233
7 ML17004A062
8 ML20358A075
9 ML20358A232
10 ML20358A239
11 ML21302A064
12 ML21292A145
13 ML22173A173
14 ML22164A067

fuel into the reactor vessel. The spent fuel will be stored in the SFP and in dry cask storage at the onsite independent spent fuel storage installations (ISFSIs) until it is shipped off site. By letter dated July 11, 2022,¹⁵ the licensee requested exemptions from specific portions of 10 CFR 50.47, "[Emergency plans](#)," and Appendix E, "[Emergency Planning and Preparedness for Production and Utilization Facilities](#)," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The requested exemptions would allow Palisades to reduce emergency planning requirements and subsequently revise the Palisades Emergency Plan consistent with the anticipated permanently defueled condition of the station.

The licensee submitted the proposed Palisades 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 22, 2023, the NRC staff granted the licensee 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."

In granting the requested exemptions, the NRC primarily relied on the Palisades site-specific SFP heatup analyses, which provided reasonable assurance that (1) an offsite radiological release would not exceed the early phase protective action guides (PAGs), provided in U.S. Environmental Protection Agency (EPA) report EPA 400/R-17/001, "PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents," issued January 2017,¹⁶ at the site's exclusion area boundary (EAB) for the remaining design-basis accident (DBA) applicable to the Palisades 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 Palisades 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. Palisades is required to maintain effective strategies, sufficient resources, and adequately trained personnel to mitigate such an event. While a beyond-DBA is unlikely, if State or local government officials determine that offsite protective actions are warranted, then sufficient time and capability would also be available for offsite response organizations (OROs) to implement these measures using a comprehensive emergency management plan (CEMP) or "all-hazards" approach.¹⁷

The Commission's approval of the requested EP exemptions for Palisades is documented in SRM-SECY-23-0043. With the NRC's approval of the requested EP exemptions, the licensee stated that the proposed Palisades PDEP will continue to meet the remaining 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 Palisades PDEP, the licensee is proposing to change the entire EAL scheme to reflect the permanently shutdown and defueled condition of Palisades. In accordance with Section IV.B.2 of Appendix E to 10 CFR Part 50, the licensee

¹⁵ ML22192A134

¹⁶ ML17044A073

¹⁷ 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 (CPG) 101, "Developing and Maintaining Emergency Operations Plans," Version 2.0, issued November 2010 (http://www.fema.gov/pdf/about/divisions/npd/CPG_101_V2.pdf).

must receive NRC approval before implementing a change to the entire EAL scheme. The licensee stated that the changes to the Palisades 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

The licensee's request for exemptions states that the specific portions of 10 CFR 50.47 and 10 CFR Part 50, Appendix E, from which exemptions are being requested are identified by using **bold strikethrough** text. The **bold strikethrough** portions of the rule language are the portions from which the licensee is requesting the Palisades permanently defueled plant condition be exempt. The remaining text will be the EP requirements applicable to the permanently defueled Palisades station.

2.1 Emergency Plan

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

...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.

The requirements of 10 CFR 50.47(b) establish the standards that the onsite and offsite emergency response plans must meet for the 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.

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

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

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. These exemptions, if granted, 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 when 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 of individual exemption requests. According to 10 CFR 50.12, the Commission may grant exemptions from the requirements of its regulations that (1) are authorized by law, (2) will not present an undue risk to public health and safety, (3) are consistent with the common defense and security, and (4) present special circumstances.

The guidance in Revision 1 to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," issued November 1980 (NUREG-0654),¹⁸ 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). NUREG-0654, which the current Palisades Emergency Plan is based on, therefore provides an acceptable method for nuclear power reactor licensees to develop radiological emergency response plans. In addition, Attachment 1, "Staff Guidance for Evaluation of Permanently Defueled Emergency Plans," to Interim Staff Guidance (ISG) NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," dated May 11, 2015,¹⁹ provides an acceptable method for the NRC staff's review of PDEPs for sites undergoing decommissioning. It was developed to ensure decommissioning facilities continue to meet the remaining applicable evaluation criteria in Section II, "Planning Standards and Evaluation Criteria," of NUREG-0654.

2.2 Emergency Action Level Scheme

As exempted for Palisades, 10 CFR 50.47(b)(4) requires that a licensee's emergency response plan contain the following:

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, thereby ensuring 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.

¹⁸ ML040420012

¹⁹ ML14106A057

Section IV.B of Appendix E to 10 CFR Part 50, as exempted for Palisades, states the following:

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 of the emergency classification and action level scheme is based upon a revision to the Palisades EAL scheme provided in the licensee's application dated July 12, 2022. As part of this review, the NRC staff assessed the site-specific modifications made by Palisades to the guidance provided in NEI 99-01, Revision 6. The NRC endorsed the NEI 99-01 methodology by letter dated March 28, 2013,²⁰ 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 NEI 99-01 methodology 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 Permanently Defueled Emergency Plan

Under the licensee's certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel under 10 CFR 50.82, "Termination of license," no power reactor operations can take place, and the licensee is prohibited from moving the fuel from the SFP to the reactor vessel. Consequently, the proposed PDEP describes the licensee's response to emergencies that may arise at the Palisades facility 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

²⁰

requirements for formal offsite REP planning. Additionally, the onsite EP activities contained in the Palisades 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 letter dated December 22, 2023.

This safety evaluation summarizes the NRC staff's technical evaluation of the Palisades 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 Palisades, and using the remaining applicable evaluation criteria provided in NUREG-0654, as outlined in attachment 1 to NSIR/DPR-ISG-002. The proposed revisions, as exempted for Palisades, are shown with **bold strikethrough** text of the current wording associated with the regulations.

3.1.1 Assignment of Responsibility (Organizational Control)

As exempted for Palisades, 10 CFR 50.47(b)(1) states the following:

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 Palisades PDEP specifies that the Shift Manager position is staffed 24 hours a day. This position is the senior management position at the facility during off hours and is responsible for monitoring facility conditions and managing the activities at Palisades. 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 one noncertified operator (NCO) and one on-shift radiation protection (RP) technician, along with security personnel. The Palisades 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 a Notification of Unusual Event (Unusual Event) classification level.

The normal on-shift staff complement provides the initial response to an emergency. The Shift Manager declares the initial emergency classification and assumes the role of Emergency Director. The Emergency Director is responsible for directing and coordinating the integrated emergency response effort during the emergency. The Palisades PDEP also specifies the nondelegable and delegable responsibilities of the Emergency Director. Members of the on-shift organization are trained on their responsibilities and duties in the event of an emergency and can perform necessary response actions until augmenting personnel arrive or the event is terminated. The minimum staff required to conduct routine and immediate emergency mitigation is maintained on shift on a continuous, 24-hour-per-day basis. The designated on-shift personnel are those positions required to direct or perform the site-specific mitigation strategies required for a loss of SFP inventory.

Arrangements are in place with 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. Appendix 1, "Letters of Agreement," of the Palisades

PDEP lists evidence of these agreements with participating local services.

OROs that may respond on site, as requested, at the Palisades facility include the following:

- medical support organizations and personnel
 - Bronson South Haven Hospital
- firefighting organizations
 - Covert Fire Department (fire/ambulance)
- law enforcement agencies
 - Michigan State Police
 - Van Buren County Sheriff Department
 - Covert Township Police Department

Based on its review of the Palisades 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. The Palisades 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, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to assignment of responsibility (organization control).

3.1.2 Onsite Emergency Organization

The regulation at 10 CFR 50.47(b)(2) states the following:

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 Palisades PDEP specifies that the Palisades facility on-shift staff positions are staffed on a continuous 24-hour-per-day basis, including a designated Shift Manager, one NCO, 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 Palisades PDEP also specifies the nondelegable and delegable responsibilities related to the Emergency Director position.

As an extension of their normal duties, Palisades personnel will be available during emergencies and will receive duty-specific training to perform emergency response activities. This includes facility on-shift personnel, maintenance, RP technicians, and security personnel.

Designated members of the on-shift staff fulfill roles within the ERO appropriate to their training and experience. The licensee specifies that additional personnel who are called to assist

operators with accident assessment, corrective and protective actions, and related activities will receive appropriate training. The relationship between normal and emergency response positions for the shift personnel is unchanged when an event occurs.

Table B.1, "Emergency Response Organization Minimum Staffing Requirements," of the Palisades PDEP depicts the on-shift and augmented ERO positions that fulfill emergency staffing capabilities. This table provides a graphic representation of the functional responsibilities for designated on-shift staff and the augmented positions that fulfill emergency staffing capabilities.

The Palisades ERO, when mobilized, augments the normal on-shift organization to respond to declared emergencies. 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 augmentation of the ERO. The minimum augmented staff consists of an RP Coordinator and a Technical Coordinator. The designated on-shift and augmented ERO personnel are capable of continuous (24-hour) operations for a protracted period.

Based on its review of the Palisades 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. The Palisades PDEP identifies (1) the onsite ERO and its relationship to the normal shift complement, (2) the on-shift individual responsible for emergency response as 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, and (4) the availability of a timely augmentation of staff with response capabilities. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, planning standard 10 CFR 50.47(b)(2) and the requirements of Sections IV.A.1, A.2, A.3, A.4, A.9, and C.1 of Appendix E to 10 CFR Part 50, as exempted for Palisades, pertaining to the onsite emergency organization.

3.1.3 Emergency Response Support and Resources

As exempted for Palisades, 10 CFR 50.47(b)(3) states the following:

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 hospital that may be required to treat a contaminated injured individual from the site, as designated in the Palisades PDEP. Section 3.1.1 of this safety evaluation discusses these letters of agreement.

Based on its review of the Palisades 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. The PDEP adequately describes the arrangements for requesting assistance from other organizations or individuals in an emergency and shows that this assistance is supported by letters of agreement. Based on this review, the NRC staff

concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to emergency response support and resources.

3.1.4 Emergency Classification System

As exempted for Palisades, 10 CFR 50.47(b)(4) states the following:

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 Palisades PDEP specifies that the emergency classification system is based on consideration of conceivable consequences of potential situations ranging from incidents in which the effects on the facility and personnel are negligible to highly unlikely releases of radioactivity. The emergency classification of these conditions, both radiological and nonradiological, indicates the relative severity for immediate implementation of response actions. The PDEP provides 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. The revised EAL scheme categorizes accidents and emergency situations into one of two emergency classification levels (ECLs) depending on emergency conditions at the time of the incident. The ECLs applicable at Palisades, considering the permanently shutdown and defueled status of the facility, in order of increasing severity, will be an Unusual Event and an Alert. The classification of emergencies up to an Alert is consistent with the regulations for an ISFSI in 10 CFR 72.32(a)(3), as well as the exemptions granted pursuant to Section IV.C.1 of Appendix E to 10 CFR Part 50, which eliminated the Site Area and General ECLs.

The Palisades EAL scheme, which specifies ECLs of 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 on site in the SFP and an ISFSI. 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. The licensee maintains the capability to assess, classify, and declare an emergency condition within 30 minutes after the availability of indications to plant personnel that an EAL threshold has been exceeded, consistent with Section IV.C.2 of Appendix E to 10 CFR Part 50, as exempted, which removed the requirement to classify a condition 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. Attachment 2 of the licensee's application dated July 12, 2022, as supplemented by letter dated November 8, 2022, contains the initiating conditions, their corresponding EALs, and the technical bases for each classifiable EAL threshold.

Based on its review of the Palisades 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. The PDEP adequately identifies (1) an emergency classification system that covers a spectrum of possible radiological and nonradiological emergencies at Palisades, (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 PDEP describes the specific instruments, parameters, or equipment status for each ECL in the EAL scheme. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to the emergency classification system.

3.1.5 Notification Methods and Procedures

As exempted for Palisades, 10 CFR 50.47(b)(5) states the following:

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 followup 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 Palisades PDEP identifies the Emergency Director position, which is assumed by the Shift Manager, as responsible for initiating notification to the State of Michigan, Van Buren County, and the NRC, as well as initiating corrective and mitigative actions. All onsite personnel are notified of the emergency declaration, escalation, or termination of an emergency by an announcement over the Palisades Public Address System. Onsite ERO personnel and the Palisades ERO personnel away from the site at the time of the Palisades ERO activation are notified through an electronic notification system or telephone calls, or both. The Emergency Director will mobilize the Palisades ERO. For all classified events, initial notification shall be provided to the State of Michigan and Van Buren County promptly following the declaration of the emergency, and within 60 minutes of the emergency declaration. The initial emergency message will include the following information if it is known and appropriate:

- authenticity (i.e., "This is NOT an Exercise (Drill)" or "This is an Exercise (Drill)")
- location of the incident
- name and telephone number (or other applicable contact information) of the individual providing the notification
- date and time of the incident
- emergency classification and EAL
- emergency response actions underway
- whether a release is in progress
- wind direction, speed, and stability class
- any request for onsite support from OROs

- prognosis for worsening or termination of the event based on available facility Information

The licensee stated that follow-up messages will be provided to the State of Michigan and Van Buren County within 60 minutes of a change in emergency classification or a change in radioactive release condition. Additionally, follow-up messages should be provided as needed or on agreed-upon intervals established with the offsite authorities. The content of follow-up messages is consistent with that provided for initial notifications described above, as known and appropriate.

If the commercial telephone system is unavailable, wireless communications can be used to make emergency notifications and maintain continuous communications with the State and county and can serve as a backup means of notifying and activating the Palisades ERO. The Federal Telecommunications System (FTS) consists of the Event Notification System (ENS) dedicated telephone system used to notify the NRC Operations Center. The ENS is used to disseminate operational conditions as well as the initial notification from Palisades to the NRC. If the ENS system is unavailable, commercial telephones (including wireless telephones) provide backup means to communicate with the NRC.

The NRC will be notified as soon as possible after the State and county notifications and within 60 minutes of event classification or change in classification. The NRC ENS is a dedicated telephone system used to notify the NRC Operations Center of an emergency. If the ENS fails, commercial telephone lines will be used to notify the NRC.

Based on its review of the Palisades 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. The PDEP adequately describes the process for initiating notifications to the NRC and State and local officials, as well as the contents of the emergency messages to be sent. The licensee, in cooperation with the State of Michigan and Van Buren County, has established mutually agreeable methods and procedures to notify OROs consistent with the approved EAL scheme and the contents of message form. Follow-up reports are provided as additional information describing the emergency becomes available, and on an as-needed basis, until the emergency condition has been terminated. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to notification methods and procedures.

3.1.6 Emergency Communications

As exempted for Palisades, 10 CFR 50.47(b)(6) states the following:

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

The Palisades PDEP specifies that various modes of communication are available to facility staff to transmit information within Palisades and to various offsite locations during normal and emergency conditions. There are provisions for 24-hour-per-day notification to State and county authorities and the NRC, for activating the Palisades ERO personnel, and for periodic testing of the emergency communication systems. The Emergency Director is responsible for the

notification of State and county agencies and the NRC, and for initiating corrective and mitigative actions when Palisades has made an emergency declaration.

The licensee states that communications may be established by different means, including radio, telephone, and public address system within plant buildings and between control room personnel and offsite support groups. The licensee specifies that the Palisades Public Address System is designed to provide alarms and announcements from the control room. This system is used to call personnel and notify onsite personnel of the declaration, escalation, or termination of an emergency, and to instruct personnel on actions to be taken upon an emergency declaration.

The licensee specified that the commercial telephone system is available in the Palisades control room and throughout Palisades and is used for onsite and offsite communications, including for requesting medical, law enforcement, and fire and rescue services through 911. It also serves as the primary means of notifying and activating the augmenting Palisades ERO positions. The licensee stated that the commercial telephone system serves as the primary means of providing emergency notifications to the State of Michigan and Van Buren County, and it is used to provide initial and follow-up notifications and for general information flow among these organizations. The licensee provides wireless communications that, if the commercial telephone system is unavailable, can be used as a backup means to make emergency notifications.

Communications with the NRC Operations Center will use the NRC ENS circuit or commercial telephone line for event notification and status updates. The NRC ENS uses the FTS telephone network for emergency communications. The FTS line exists between the NRC Operations Center and the Palisades control room. The ENS is used to disseminate operational conditions as well as the initial notification from Palisades to the NRC. If the ENS system is unavailable, commercial telephones (including wireless telephones) provide backup means to communicate with the NRC. The NRC will be notified as soon as possible after State and local notifications and within 60 minutes of event classification or change in classification.

All onsite personnel are notified of the emergency declaration, escalation, or termination of an emergency by an announcement over the Palisades Public Address System. Onsite ERO personnel and the Palisades ERO personnel away from the site at the time of the ERO activation are notified through an electronic notification system or telephone calls, or both. A radio system is also available for communicating between individuals on site, including individuals in the Palisades control room. Section N.2.1, "Communication Drills or Surveillances," of the Palisades PDEP describes the periodic testing of the emergency communications system.

Based on its review of the Palisades 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. The PDEP adequately demonstrates 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, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to emergency communications.

3.1.7 Public Education and Information

As exempted for Palisades, 10 CFR 50.47(b)(7) states the following:

~~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 Palisades PDEP specifies that communications personnel will be notified of an emergency declaration and will serve as spokesperson. Plant or corporate management could also perform the spokesperson function. 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.

Based on its review of the Palisades 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. The PDEP adequately identifies the organization that includes a communications position that would serve as the licensee's designated spokesperson should an emergency be declared at Palisades. The spokesperson is available for media inquiries, and the positional duties include coordinating with senior management to address rumors and disseminate information to the public regarding an emergency at Palisades. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, planning standard 10 CFR 50.47(b)(7), as exempted for Palisades, pertaining to public education and information.

3.1.8 Emergency Facilities and Equipment

The regulation in 10 CFR 50.47(b)(8) states the following:

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

The Palisades PDEP specifies that, following the declaration of an emergency, the activities of the ERO will be coordinated from the control room, from where the Emergency Director will assess conditions; evaluate the magnitude and potential consequences of abnormal conditions; initiate preventive, mitigating, and corrective actions; perform onsite and offsite notifications; and maintain communications. When activated, the ERO reports to the control room.

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

This is consistent with Section IV.E.8.a of Appendix E to 10 CFR Part 50, as exempted, which eliminated the requirements for a separate licensee onsite technical support center, onsite operations support center, and emergency operations facility.

Annunciator and computer alarms are provided for a variety of important parameters, including the SFP and associated systems to indicate SFP level and temperature. The Palisades Permanently Defueled EAL Technical Bases document details the manner in which the plant's process monitors are used for accident recognition and classification. Radiation monitors and monitoring systems provide continuous radiological surveillance. These monitors, which include control room readout and alarm functions, exist so that appropriate action can be initiated to limit fuel damage and contain radioactive material. The system warns personnel of potential radiological health hazards, gives early warning of certain equipment malfunctions that might lead to a radiological hazard or facility damage, and prevents or minimizes the effects of inadvertent releases of radioactivity. Plant instrumentation also provides control room personnel with area radiation levels and gaseous and liquid effluent monitor readings to perform dose assessments and determine the magnitude of a potential release. In addition to installed monitoring systems, onsite portable radiation and contamination monitoring equipment is available.

Meteorological data for the area surrounding the Palisades site are available in the control room. The data are used to determine the projected path and radiological consequences in the event of an accidental release of radioactivity to the environment. Section P.8, "Inventory and Maintenance of Emergency Equipment," of the Palisades PDEP discusses the periodic inventory, testing, and calibration of emergency medical response equipment and supplies that are conducted in accordance with approved facility procedures. This includes, but is not limited to, portable radiation monitors, emergency medical response equipment, dosimeters, and portable radios.

Based on its review of the Palisades 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. The PDEP adequately identifies the facilities, equipment, and ERO personnel, which report to the Emergency Director, that are available to assess the situation; evaluate the magnitude and potential consequences of abnormal conditions; initiate preventive, mitigating, and corrective actions; and perform onsite and offsite notifications as appropriate to the emergency. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, planning standard 10 CFR 50.47(b)(8), as well as the requirements of Sections IV.E and G of Appendix E to 10 CFR Part 50, as exempted for Palisades, pertaining to emergency facilities and equipment.

3.1.9 Accident Assessment

As exempted for Palisades, 10 CFR 50.47(b)(9) states the following:

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

The Palisades PDEP specifies that station procedures provide for preventive or corrective actions to mitigate the consequences of events. Instrumentation, control systems, and radiation monitors indicate the safe and orderly implementation of corrective actions. These systems

specifically indicate SFP storage inventory (level), temperature, cooling, and supporting systems status.

Palisades maintains procedures and strategies for the movement of any necessary portable equipment that will be relied upon for mitigating the loss of SFP water. These diverse strategies provide defense in depth and ample time to supply makeup water or spray before the onset of zirconium cladding ignition, when considering the very low probability of beyond-design-basis events affecting the SFP.

Palisades maintains and operates the onsite monitoring systems needed to provide data essential for initiating emergency measures and performing accident assessment, including dose assessment, and determining the magnitude of a release. The licensee can perform dose assessment on a 24-hour-per-day basis. The licensee's dose assessment is the responsibility of the Emergency Director and can initially be performed by any qualified on-shift individual. Certified Fuel Handlers (CFHs) are qualified to perform dose assessments. The licensee maintains at least one CFH-qualified individual on shift on a 24-hour-per-day basis. When augmented, the RP Coordinator assumes the dose assessment responsibilities.

Based on its review of the Palisades 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. The PDEP adequately identifies 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, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to accident assessment.

3.1.10 Protective Actions

As exempted for Palisades, 10 CFR 50.47(b)(10) states the following:

~~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 Palisades PDEP identifies the protective actions for station personnel, contractors, and visitors (members of the public) located on site and addresses accountability and site egress methods. Station procedures also provide the means to protect personnel during hostile actions.

The Palisades PDEP states that personnel accountability should be considered and used as a protective action whenever a sitewide risk to health and safety exists or at the discretion of the Emergency Director. If personnel accountability is required, at the direction of the Emergency Director, all individuals at the facility (including employees without emergency assignments,

visitors, and contractor personnel) shall be notified of the emergency and provided with instructions.

The Emergency Director has the authority to initiate personnel accountability. Accountability should be considered and used as a protective action whenever a risk to health or safety exists, or at the discretion of the Emergency Director. If personnel accountability is required, at the direction of the Emergency Director, all individuals at the facility (including employees without emergency assignments, visitors, and contractor personnel) shall be notified of the emergency and provided with instructions. Accountability of all personnel inside the protected area should be accomplished within 60 minutes after event declaration and maintained thereafter at the discretion of the Emergency Director. Following announcement of an emergency declaration, onsite personnel are responsible for reporting to designated areas and aiding the accountability process. If personnel are not accounted for, the Emergency Director is notified, and onsite announcements are made. If personnel are still unaccounted for following the onsite announcements, search and rescue operations are initiated. In the event of a suspected radiological release, personnel are monitored for radioactive contamination before leaving the protected area. RP staff or trained monitoring personnel will perform monitoring using instrumentation that is normally available or specifically assigned for this purpose.

Based on its review of the Palisades 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. The PDEP adequately identifies the protective actions for onsite personnel, including station personnel, contractors, and visitors (members of the public), and ensures that protective equipment and supplies are maintained to support an emergency response. The PDEP also specifies that plant evacuees be monitored for radioactive contamination before leaving the Palisades protected area. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, planning standard 10 CFR 50.47(b)(10) and the requirements of Sections IV.C.1, E, and I of Appendix E to 10 CFR Part 50, as exempted for Palisades, pertaining to protective response.

3.1.11 Radiological Exposure Control

The regulation in 10 CFR 50.47(b)(11) states the following:

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 Palisades PDEP identifies all reasonable measures that 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 to remain within applicable limits specified in 10 CFR Part 20, "Standards for Protection Against Radiation." The Shift Manager or Emergency Director has the responsibility to authorize emergency dose commitments in excess of the 10 CFR Part 20 limits. This authorization is coordinated with the assistance of the site RP Coordinator. Table K.1, "Emergency Exposure Criteria," of the Palisades PDEP contains the guidelines for emergency exposure criteria, which is consistent with Table 3-1, "Emergency Worker Guidelines," in the EPA PAG Manual.

Individuals authorized to enter radiological control areas (RCAs) at Palisades are trained and issued personal radiation dosimetry. High range or electronic dosimeters or alarming self-indicating dosimetry, or both, are used to monitor emergency worker exposure during an accident. The licensee stated that emergency workers are instructed to read self-indicating dosimeters frequently, and dosimetry may be processed with increased periodicity. Emergency worker dose records are maintained in accordance with procedures. All reasonable measures are to be taken to control the radiation exposure to emergency response personnel providing rescue, first aid, decontamination, emergency transportation, medical treatment services, and corrective and assessment actions to remain within the applicable limits specified in 10 CFR Part 20.

During emergency conditions, Palisades maintains normal plant decontamination measures and contamination control limits. However, the RP Coordinator may modify these limits 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. The facility procedures contain the Palisades contamination control criteria for returning areas and items to normal use. Emergency equipment and supplies are stored at various locations throughout the site for immediate use by emergency forces.

Based on its review of the Palisades 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. 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, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to radiological exposure control.

3.1.12 Medical and First Aid Support

The regulation in 10 CFR 50.47(b)(12) states the following:

Arrangements are made for medical services for contaminated injured individuals.

The Palisades PDEP specifies that the licensee maintains on-shift personnel and equipment to provide first aid for personnel working at the site. First aid equipment and supplies are located in the first aid room. In addition, trauma and primary response kits are available throughout the facility and are inspected and maintained in accordance with approved facility procedures.

In the supplement dated November 8, 2022, the licensee asserted that the Palisades ERO onsite initial responders, as part of their position qualification program, receive first aid, cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) training. The training classes use American Heart Association or American Red Cross course materials and are taught by their qualified trainers, respectively. ERO initial responders consist of CFHs and RP technicians, who are responsible for responding to onsite emergencies and for providing first aid and CPR and AED assistance to injured, and if necessary, injured contaminated personnel. A minimum complement of qualified CFHs and RP technicians are required to be on site on a continuous basis.

Arrangements are in place with the agencies listed in appendix 1 to the PDEP for prompt ambulance transport of persons with injuries involving radioactivity to designated hospitals. Such service is available on a 24-hour-a-day basis. Local ambulance services are available to transport seriously ill, injured, or radioactively contaminated injured personnel.

The control room obtains direct ambulance dispatch through 911. The dispatcher provides for a coordinated communications link to the ambulances responding to Palisades or transporting contaminated or injured personnel from Palisades. Arrangements have been made for the Covert Fire Department to transport injured, contaminated, and irradiated personnel to the hospital.

An agreement is in place with Bronson South Haven Hospital for medical treatment of patients from Palisades who have injuries complicated by radioactive contamination. The Bronson South Haven Hospital is located in South Haven, Michigan, approximately 6 miles from Palisades. The hospital provides facilities such as an emergency room, a laboratory, a radiology department, and a nuclear medicine department. The hospital has trained personnel for handling radioactively contaminated patients.

Based on its review of the Palisades 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. The PDEP adequately identifies arrangements that 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 overexposures. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to medical and first aid support.

3.1.13 Recovery and Reentry

The requirement in 10 CFR 50.47(b)(13) states the following:

General plans for recovery and reentry are developed.

The Palisades PDEP identifies the Shift Manager/Emergency Director as assuming total responsibility for overall emergency response actions and recovery. 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 Palisades PDEP divides reentry into two categories:

- (1) As directed by the Emergency Director, reentry during the emergency phase of an accident may be performed to save a life, control a release of radioactive material, prevent further damage to plant equipment, or restore plant equipment. If necessary, this category of reentry may be performed using emergency exposure limits described in PDEP Part 2, Section K. Briefings and emergency forms, rather than written radiation

protection procedures, operating procedures, and maintenance procedures, can be used when making these entries.

- (2) As directed by the Emergency Director or the recovery organization, reentry during the recovery phase is performed using normal exposure limits and normal procedures, or procedures developed specifically for each reentry. Survey results and all other pertinent information collected from logs and other records, or other indicators, may be used to evaluate the advisability and the timing of reentry to affected areas.

The licensee stated that radiation exposure to personnel involved in the recovery will be kept as low as reasonably achievable and within the stated limits of 10 CFR Part 20. Radiation areas will be roped off and posted with warning signs and controlled in accordance with plant procedures. The licensee specified that access to these areas will be controlled and exposures to personnel entering such areas documented. Shielding will be fully employed, to the extent possible. The plan is to return facility conditions to within technical specification limits. The licensee also stated that a nuclear safety/review committee reviews and approves recovery operations in accordance with its charter and the technical specifications.

Once the decision is made to enter the recovery phase, the extent of the staffing required for the recovery organization will be determined. A site Recovery Director will be appointed by senior management and charged with the responsibility for directing the activities of the recovery organization. These responsibilities include the following:

- Ensure an event summary report is prepared and transmitted to offsite authorities.
- Oversee the development of, and approve, a recovery plan and any special recovery procedures.
- Deactivate any of the Palisades ERO positions that were retained to aid in recovery, in the appropriate manner. Depending upon the type of accident, certain ERO positions may remain in place after initiation of the recovery phase.
- Approve information released by the public information organization that pertains to the emergency or the recovery phase of the accident.
- Maintain a record or log of specific recovery actions taken.
- Work with senior company management to assist employees affected by the event.
- Determine when the recovery phase is terminated. Recovery will be terminated when actions identified in the recovery plan have been completed.
- Identify and document issues relating to recovery operations.
- Coordinate the development and implementation of the recovery plan and procedures.
- Direct all onsite activities in support of recovery.
- Designate other recovery positions required in support of onsite recovery activities.

- Investigate the event in accordance with the Palisades Corrective Action Program.

Based on its review of the Palisades 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. The 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. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to recovery and reentry.

3.1.14 Exercises and Drills

The regulation in 10 CFR 50.47(b)(14) states the following:

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.

The Palisades PDEP identifies periodic exercises and drills that will be conducted to evaluate major portions of the licensee's emergency response capabilities, as well as to develop and maintain key emergency response skills. Emergency exercises and drills are conducted to train, test, develop, and maintain the proficiency of emergency responders.

The Palisades PDEP states that biennial exercises shall be conducted to test the timing and content of the Palisades implementing procedures and methods, as well as to ensure that emergency personnel are familiar with their duties. OROs are offered the opportunity to participate in the Palisades biennial exercises to the extent assistance would be expected during an emergency declaration. However, participation by offsite organizations is not required, nor are offsite response organizations evaluated.

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

- Communication Drills:
 - The ENS used to communicate with the NRC is tested monthly.
 - The communication links between the control rooms and the State of Michigan and Van Buren County will be tested monthly.
 - The communication systems listed below, as detailed in section F of the PDEP, are used frequently. Therefore, periodic testing of these systems is not necessary.
 - public address system

- commercial telephone systems
 - radio system
- Fire Drills: Drills are conducted in accordance with the Palisades Fire Protection Plan, which has been reviewed and approved by the NRC.
 - Medical Emergency Drills: On an annual basis, medical emergency drills are conducted and involve an individual who is simulated to be injured and contaminated. The Covert Fire Department and Bronson South Haven Hospital are invited to participate to demonstrate and practice the receipt and treatment of contaminated patients.
 - RP Drills: On an annual basis, RP drills are conducted that involve response to, and analysis of, simulated airborne samples with elevated levels of activity. These drills also involve direct measurements of radiation levels in the facility. Normal and emergency radiation procedures and processes are followed for the simulated conditions.

The Palisades PDEP states that a scenario package is developed for each EP exercise or drill conducted. The information included in the scenario package is in accordance with facility procedures. Controllers or observers are assigned to evaluate drill or exercise performance. Following each drill or exercise, a critique is conducted to evaluate the ability of the participants to implement the PDEP and emergency implementing procedures. Biennially, representatives from the NRC observe and evaluate an exercise, including the licensee's ability to conduct an adequate self-critical critique. Identified areas of the EP program that require improvement are entered, tracked, and resolved in the Palisades Corrective Action Program. Feedback is provided to participants through critiques, drills, or exercise reports, or in accordance with training program requirements.

Based on its review of the Palisades 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. The PDEP adequately identifies the general goals for exercises and drills and the intent of exercise scenarios and evaluates exercise and drill performance objectives against measurable demonstration criteria. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to exercises and drills.

3.1.15 Radiological Emergency Response Training

The regulation in 10 CFR 50.47(b)(15) states the following:

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

The Palisades PDEP specifies that radiological emergency response training is provided to those who may be called on to assist in an emergency. Palisades ERO personnel receive initial, specialized, and periodic continuing training. Training program details are maintained in Training Department procedures and are tailored to ensure proficiency in the assigned ERO position. The licensee stated that new ERO personnel receive an initial overview course that familiarizes

them with the PDEP by providing basic information in the following areas, as well as specific information as delineated in the sections below:

- planning basis
- emergency classifications
- ERO and responsibilities
- activation of the ERO

The Palisades PDEP states that personnel qualified as an Emergency Director receive specialized training in the following areas:

- emergency notifications
- emergency classification
- EALs
- mitigative and protective actions
- emergency exposure control

Training program details are maintained in Training Department procedures and are tailored to ensure proficiency in the assigned ERO position. New ERO personnel receive an initial overview course that familiarizes them with the PDEP by providing the basic information listed above, as well as specific information in the areas of planning basis, emergency classifications, ERO responsibilities, and activation of the ERO. In addition to the training received to qualify for their normal duties, personnel responsible for radiological assessment receive periodic training on dose assessment, basic meteorology, and transportation of injured individuals.

Training is offered annually to offsite organizations that may provide specialized services when responding on site during an emergency at Palisades (e.g., firefighting, medical services, transport of contaminated and injured personnel). The training shall be structured to meet the needs of that organization with respect to the nature of its support. The training includes topics involving event notification, site access, basic RP, and interface activities. The Palisades procedures outline the process to document training of the ERO.

Based on its review of the Palisades 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. The PDEP adequately identifies the level and depth of the EP training program that the individuals are to receive. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to radiological emergency response training.

3.1.16 Emergency Plan Development and Review

The regulation in 10 CFR 50.47(b)(16) states the following:

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

The licensee stated that Palisades personnel who perform planning duties for the EP programs receive ongoing training and experiences to maintain or improve their knowledge related to emergency planning. The licensee stated that the Palisades PDEP is reviewed on an annual

basis and updated, as necessary, to maintain its effectiveness. The manager responsible for emergency planning determines which recommended changes are incorporated into the PDEP. The licensee stated that it will evaluate all proposed changes in accordance with 10 CFR 50.54(q). Changes to the PDEP are made without NRC approval only if such changes do not reduce the effectiveness of the PDEP, and the PDEP, as changed, continues to meet the standards of 10 CFR 50.47(b) and 10 CFR Part 50, Appendix E, as exempted. Proposed changes that reduce or have a potential to reduce the effectiveness of the approved PDEP are not implemented without prior approval by the NRC. Technical reviews of the PDEP and emergency implementing procedures shall be conducted in accordance with facility procedures.

The Palisades PDEP provides that letters of agreement with offsite support agencies be reviewed annually. The agreements will be revised or recertified as appropriate. Recertification may include a recertification letter or memorandum, purchase order, email, documented telephone conversation, or other correspondence. The licensee coordinates an independent review of the EP program to meet the requirements of 10 CFR 50.54(t). Results of this review are submitted to the Palisades Vice President. The manager responsible for emergency planning ensures that any findings that deal with offsite interfaces are reviewed with the appropriate agencies. Written notification will be given to local agencies documenting the results of the audit and providing notice of availability of the audit records for review at Palisades. Records of the review are maintained for at least 5 years. The Palisades Emergency Telephone Directory will also be maintained and updated at least quarterly.

The Palisades PDEP provides that periodic inventory, testing, and calibration of emergency equipment and supplies be conducted in accordance with approved facility procedures. This includes, but is not limited to, portable radiation monitors, 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, as well as after each use. The Palisades PDEP states that sufficient reserves of equipment and instrumentation will be stocked to replace emergency equipment and instrumentation removed from service for calibration and repair.

Based on its review of the Palisades 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. The PDEP adequately identifies responsibility for the issuance, control, and revision or updating of the PDEP, EIPs, and support documents. Based on this review, the NRC staff concludes that, considering the permanently shutdown and defueled status of the facility, the Palisades PDEP addresses, in an acceptable manner, 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 Palisades, pertaining to emergency plan development and review.

3.2 Emergency Action Level Scheme

The licensee currently uses an EAL scheme based on NEI 99-01, Revision 5, with site-specific modifications due to design issues or licensee preference. The licensee is revising its current EAL scheme using the guidance in Section 8, "Independent Spent Fuel Storage Installation (ISFSI) Initiating Conditions (ICs) 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 on site in the Palisades SFP and ISFSI located at the Palisades facility.

As discussed in the NRC staff's safety evaluation associated with the exemptions granted to Palisades 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 Palisades that can result in a radiological release exceeding the early phase PAGs at the EAB. Therefore, the NRC staff's assessment of the risks and consequences of a radiological release at Palisades, based on its permanently shutdown and defueled condition, concluded that, in accordance with Section IV.C.1 of Appendix E to 10 CFR Part 50, as exempted, the risks and consequences are insufficient to warrant a Site Area Emergency or General Emergency classification level. As a result, the only ECLs applicable to the Palisades facility are an Unusual Event or an Alert.

In its application dated July 12, 2022, the licensee submitted its proposed EAL scheme for Palisades 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 Palisades, 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 it 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 on site in the SFP and ISFSI at the Palisades facility. The NRC staff reviewed the proposed EAL scheme, technical basis, comparison matrix, and all additional information and found that the scheme has site-specific modifications from the guidance in NEI 99-01, Revision 6, 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 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 following the key characteristics 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 ECL 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, "Emergency Action Level Guidelines for Nuclear Power Plants," 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
- use of objective and observable values

The Palisades 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 EP-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 Palisades includes two ECLs: Unusual Event (U), and Alert (A). ICs for entry into each of the two ECLs are specified for conditions relating to the following:

- Abnormal Radiation Levels/Radiological Effluent: PD-A
- Hazards and Other Conditions Affecting Plant Safety: PD-H
- System Malfunction: PD-S
- Hazards and Other Conditions Affecting ISFSI: E-H.

This safety evaluation uses the numbering system from the proposed plant-specific permanently defueled 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 and downgrading for these EALs are consistent with the overall 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 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.

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

- No longer use the following definitions in NEI 99-01 previously used in the Palisades Permanently Defueled EAL Technical Bases Document:
 - General Emergency
 - Site Area Emergency
- Revise the definition for “Alert” to change “plant” to “facility” and to delete “of safety systems.”
- Change “Notification of Unusual Event” to “Unusual Event.”
- Remove operating mode applicability, as it does not apply in a permanently defueled condition.
- Remove “Example” from EALs since they are no longer examples.

- Revise the reference to “plant” to “facility” to indicate that Palisades is no longer an operating nuclear power plant.
- Revise the definition for “Notification of Unusual Event (NOUE)” to change “plant” to “facility” and to delete “of safety systems” for reasons detailed in the preceding bullet.
- Do not use the following key terms in the Palisades Permanently Defueled EAL Technical Bases Document for reasons previously provided:
 - The key term, “Initiating Condition,” was revised to change “four emergency classification levels” to “two emergency classification levels” because the “Site Area Emergency” and “General Emergency” are not applicable to a permanently shutdown and defueled facility.
 - The key term, “Emergency Classification Level,” was revised to exclude reference to “Site Area Emergency” and “General Emergency” because the classification levels are no longer credible emergency classifications at Palisades, and no DBA or reasonably conceivable beyond-DBA will result in radiological releases requiring offsite protective actions.
- Add site-specific basis information.

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

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

3.2.1.1 EAL PD-AU1, “Release of gaseous or liquid radioactivity greater than 2 times the Off-Site Dose Calculation Manual (OCDM) limits for 60 minutes or longer”

This EAL addresses a potential decrease in the level of facility safety 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 licensee’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:

- Initiating Condition: inserted the ODCM as the site-specific effluent release controlling document
- Notes, Bullet #3: replaced “have stopped due to actions to isolate the release path” with “have stopped due to isolation of the release path”
- added “OR” between the EALs as an operator aid to facilitate EAL navigation
- EAL #1: added “Valid”

- EAL #1: provided Palisades site-specific effluent radiation monitors and calculated threshold values
- EAL #1: replaced “2 times the alarm setpoint established by a current radioactivity discharge permit” with “the reading shown” and included Palisades site-specific calculated effluent radiation monitor threshold values on which to base the declaration of an UNUSUAL EVENT
- EAL #2: added “Confirmed”
- EAL #2: inserted “ODCM” as the site-specific effluent release controlling document

For the site-specific change to reference the ODCM as the site-specific effluent release controlling document, the NRC staff verified that Palisades implemented the developer notes for identifying the site-specific effluent release controlling document contained in NEI 99-01, Revision 6, as the basis for this specific 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.

3.2.1.2 EAL PD-AA1, “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 PAGs. It includes both monitored and unmonitored releases. Releases of this magnitude represent an actual or potential substantial degradation of the level of facility safety, as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant uncontrolled release).

The NRC staff verified that the licensee’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:

- Notes, Bullet #3: replaced “have stopped due to actions to isolate the release path” with “have stopped due to isolation of the release path”
- added “OR” between the EALs as an operator aid to facilitate EAL navigation
- EAL #1: added “Valid”
- EAL #1: provided Palisades site-specific effluent radiation monitors and calculated threshold values

- EAL #2: provided “the site boundary” as the site-specific dose receptor point
- EAL #3: added “Confirmed”
- EAL #3: provided “the site boundary” as the site-specific dose receptor point
- EAL #4: provided “the site boundary” as the site-specific dose receptor point

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.

3.2.1.3 EAL PD-AU2, “UNPLANNED rise in facility radiation levels”

This EAL addresses a loss in water level above irradiated fuel sufficient to cause elevated radiation levels. This condition could be a precursor to a more serious event and is also indicative of a minor loss in the ability to control radiation levels within the facility. It is therefore a potential degradation in the level of facility safety.

The NRC staff verified that the licensee’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:

- added “OR” between the EALs as an operator aid to facilitate EAL navigation
- EAL #1.a: provided Palisades site-specific SFP level indications
- EAL #1.b: provided Palisades site-specific area radiation monitors

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.

3.2.1.4 EAL PD-AA2, “UNPLANNED rise in facility radiation levels that impedes facility 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 requires local monitoring, to maintain systems needed to retain spent fuel integrity. As used here, “impede” includes

hindering or interfering, provided that the interference or delay is sufficient to significantly threaten necessary facility access. It is this impaired access that results in the actual or potential substantial degradation of the level of facility safety.

The NRC staff verified that the licensee'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:

- added "OR" between the EALs as an operator aid to facilitate EAL navigation
- EAL #1: provided applicable Palisades site-specific areas
- EAL #2: reworded to better align with the IC without changing the intent of the EAL
- EAL #2: eliminated the word "results" because the use of survey results is implied
- EAL #2: provided applicable Palisades site-specific areas

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 Category "PD-H": Hazards and Other Conditions Affecting Facility Safety

3.2.2.1 EAL PD-HU1, "Confirmed SECURITY CONDITION or threat"

This EAL addresses events that pose a threat to facility personnel or spent fuel cooling system equipment and thus represent a potential degradation in the level of facility safety. Security events that do not meet one of these EALs are adequately addressed by the requirements of 10 CFR 73.71, "Reporting of safeguards events," or 10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors—General requirements." Security events assessed as HOSTILE ACTIONS are classifiable under IC PD-HA1.

The NRC staff verified that the licensee'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:

- added "OR" between the EALs as an operator aid to facilitate EAL navigation
- EAL #1: provided the Security Shift Leader as the Palisades "site-specific security shift supervision"

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 notification of an aircraft attack threat or an occurrence of a hostile action within the owner-controlled area. 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 facility and staff for a potential aircraft impact.

The NRC staff verified that the licensee'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:

- added "OR" between the EALs as an operator aid to facilitate EAL navigation
- EAL #1: provided the Security Shift Leader as the Palisades "site-specific security shift supervision"

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 SAFETY SYSTEM equipment necessary for spent fuel cooling"

This EAL addresses a hazardous event that causes damage to at least one train of a 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.

The NRC staff verified that the licensee'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:

- EAL #1.b: excluded "train" with Palisades site-specific information because the Palisades SFP does not have train separation

- EAL #1 (b and c): excluded the term “SAFETY SYSTEM” because only those systems required to maintain spent fuel cooling are necessary in the permanently shutdown and defueled condition, and these systems, by definition, are not SAFETY SYSTEMS

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.

3.2.2.4 EAL PD-HU3, “Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT”

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist that the Emergency Director believes to fall under the ECL description for an Unusual Event.

The NRC staff verified that the licensee’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 numbering from the EAL because only one EAL is associated with the IC
- replaced “SAFETY SYSTEMS” with “systems needed to maintain spent fuel integrity,” as the term “safety systems” is not applicable in the permanently shutdown and defueled condition

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 addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist that the Emergency Director believes to fall under the ECL description for an Alert.

The NRC staff verified that the licensee’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 numbering from the EAL because only one EAL is associated with the IC

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-S”: System Malfunction

3.2.3.1 EAL PD-SU1, “UNPLANNED Spent Fuel Pool temperature rise”

This EAL addresses a condition that is a precursor to a more serious event and represents a potential degradation in the level of facility safety. If uncorrected, boiling in the pool will occur and result in a loss of pool level and increased radiation levels. Escalation of the ECL would be by PD-AA1 or PD-AA2.

The NRC staff verified that the licensee’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 numbering from the EAL because only one EAL is associated with the IC
- provided Palisades site-specific temperature for the SFP

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.

3.2.4 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 word “cask,” as used in this EAL, refers to the storage container in use at the site for dry storage of irradiated fuel. The issues of concern are the creation of a potential or actual release path to the environment, degradation of any fuel assemblies due to environmental factors, and configuration changes that 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 the licensee's implementation of this EAL, except for the site-specific changes identified below, is consistent with the guidance provided in section 8 of NEI 99-01, Revision 6.

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

- removed numbering from the EAL because only one EAL is associated with the IC
- included the cask-specific EAL threshold values corresponding to 2 times the cask-specific technical specification allowable value for each of the cask systems in use at the Palisades ISFSI

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 its review of the proposed Palisades 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 Palisades PDEP provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the facility after docketing the certification of permanent fuel removal from the reactor vessel. Therefore, the NRC staff concludes that the licensee's proposed Palisades PDEP, as provided in attachment 1 of the licensee's application dated July 12, 2022, is acceptable.

3.3.2 Emergency Action Level Scheme Conclusions

The NRC staff has reviewed the technical basis for the proposed EAL scheme for Palisades in the permanently shutdown and defueled condition; the modifications from NEI 99-01, Revision 6; and the licensee's evaluation of the proposed changes. The licensee chose, in part, to modify its EAL scheme from the generic development guidance provided in NEI 99-01, Revision 6, to adopt a format more in alignment with its currently approved EAL scheme, as well as 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 or 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 public health and safety. Risk assessments were appropriately used to set the boundaries of the ECLs and ensure that all EALs that trigger emergency classification are in the same range of relative risk.

Based on the above, as described in section 3.2 of this safety evaluation, the NRC staff's review 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 to Appendix E of 10 CFR Part 50, as exempted for Palisades. Therefore, the NRC staff concludes that the proposed EAL scheme, as provided in attachment 2 of the licensee's application dated July 12, 2022, 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 staff notified the State of Michigan's official on September 21, 2023, of the proposed issuance of the amendment. The State of Michigan official had no comments.

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 as published in the *Federal Register* on September 6, 2022 (87 FR 54550). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10). Under 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that with the issuance of this amendment, (1) there is reasonable assurance that public health and safety 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.

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Date: December 22, 2023