



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

October 28, 2016

Vice President, Operations
Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

**SUBJECT: PALISADES NUCLEAR PLANT - ISSUANCE OF AMENDMENT RE: CONTROL
ROD DRIVE EXERCISE SURVEILLANCE (CAC NO. MF8297)**

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 260 to Renewed Facility Operating License No. DPR-20 for the Palisades Nuclear Plant (PNP). The amendment approves changes to the PNP license and technical Specifications (TS) in response to your application dated August 22, 2016, as supplemented by letter dated September 8, 2016.

Specifically, the amendment replaces existing license condition 2.C.(4) with a new license condition that states that TS Surveillance Requirement (SR) 3.1.4.3 is not required for control rod drive 13 (CRD-13) during cycle 25 until the next entry into Mode 3. In addition, the license condition states that CRD-13 seal leakage shall be repaired prior to entering Mode 2 following the next Mode 3 entry, and that the reactor shall be shut down if CRD-13 seal leakage exceeds 2 gallons per minute. The amendment also replaces an obsolete note in TS SR 3.1.4.3 with a note to clarify that TS SR 3.1.4.3 is not required to be performed or met for CRD-13 during cycle 25 provided CRD-13 is administratively declared immovable, but trippable, and Condition D is entered for CRD-13.

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A copy of our related safety evaluation is provided in Enclosure 2. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Jenni Rankin", with a long horizontal flourish extending to the right.

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures:

1. Amendment No. 260 to DPR-20
2. Safety Evaluation

cc w/encls: Distribution via Listserv



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

ENTERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-255

PALISADES NUCLEAR PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 260
License No. DPR-20

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Nuclear Operations, Inc. (the licensee), dated August 22, 2016, as supplemented September 8, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public; and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to the license amendment, and Paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-20 is hereby amended to read as follows:

The Technical Specifications contained in Appendix A, as revised through Amendment No. 260, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. ENO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. In addition, Paragraph 2.C.(4) of Renewed Facility Operating License No. DPR-20 is hereby amended to read as follows:

The following requirements shall apply to control rod drive CRD-13 during cycle 25:

- (a) Performance of Technical Specifications Surveillance Requirement SR 3.1.4.3 is not required for CRD-13 until the next entry into Mode 3.
- (b) Seal leakage on CRD-13 shall be repaired prior to entering Mode 2, following the next Mode 3 entry.
- (c) The reactor shall be shut down if CRD-13 seal leakage exceeds two gallons per minute.

4. This license amendment is effective as of the date of issuance and shall be implemented within 15 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



David J. Wrona, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Date of Issuance: October 28, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 260

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Replace the following pages of the Renewed Facility Operating License No. DPR-20 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

REMOVE

Page 3
Page 5a

INSERT

Page 3
Page 5a

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

REMOVE

Page 3.1.4-3

INSERT

Page 3.1.4-3

- (1) Pursuant to Section 104b of the Act, as amended, and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," (a) ENP to possess and use, and (b) ENO to possess, use and operate, the facility as a utilization facility at the designated location in Van Buren County, Michigan, in accordance with the procedures and limitation set forth in this license;
 - (2) ENO, pursuant to the Act and 10 CFR Parts 40 and 70, to receive, possess, and use source and special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended;
 - (3) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use byproduct, source, and special nuclear material as sealed sources for reactor startup, reactor instrumentation, radiation monitoring equipment calibration, and fission detectors in amounts as required;
 - (4) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material for sample analysis or instrument calibration, or associated with radioactive apparatus or components; and
 - (5) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operations of the facility.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act; to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) ENO is authorized to operate the facility at steady-state reactor core power levels not in excess of 2565.4 Megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.
 - (2) The Technical Specifications contained in Appendix A, as revised through Amendment No. 260, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. ENO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
 - (3) Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated December 12, 2012, as supplemented by letters dated February 21, 2013, September 30, 2013, October 24, 2013, December 2, 2013, April 2, 2014, May 7, 2014, June 17, 2014, August

(c) Transition License Conditions

1. Before achieving full compliance with 10 CFR 50.48(c), as specified by 2, below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in 2. above.
 2. The licensee shall implement the modifications to its facility, as described in Table S-2, "Plant Modifications Committed," of ENO letter PNP 2014-080 dated August 14, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the second full operating cycle after NRC approval. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
 3. The licensee shall implement the items listed in Table S-3, "Implementation Items," of ENO letter PNP 2014-097 dated November 4, 2014, within six months after NRC approval, or six months after a refueling outage if in progress at the time of approval with the exception of Implementation Items 3 and 8 which will be completed once the related modifications are installed and validated in the PRA model.
- (4) The following requirements shall apply to control rod drive CRD-13 during cycle 25:
- (a) Performance of Technical Specifications Surveillance Requirement SR 3.1.4.3 is not required for CRD-13 until the next entry into Mode 3.
 - (b) Seal leakage on CRD-13 shall be repaired prior to entering Mode 2, following the next Mode 3 entry.
 - (c) The reactor shall be shut down if CRD-13 seal leakage exceeds two gallons per minute.
- (5) [deleted]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify the position of each control rod to be within 8 inches of all other control rods in its group.	12 hours
SR 3.1.4.2	Perform a CHANNEL CHECK of the control rod position indication channels.	12 hours
SR 3.1.4.3	<p>-----NOTE-----</p> <p>Not required to be performed or met for control rod 13 during cycle 25 provided control rod 13 is administratively declared immovable, but trippable and Condition D is entered for control rod 13.</p> <p>-----</p> <p>Verify control rod freedom of movement by moving each individual full-length control rod that is not fully inserted into the reactor core ≥ 6 inches in either direction.</p>	92 days
SR 3.1.4.4	Verify the rod position deviation alarm is OPERABLE.	18 months
SR 3.1.4.5	Perform a CHANNEL CALIBRATION of the control rod position indication channels.	18 months
SR 3.1.4.6	Verify each full-length control rod drop time is ≤ 2.5 seconds.	Prior to reactor criticality, after each reinstallation of the reactor head



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 260 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

ENTERGY NUCLEAR OPERATIONS, INC.

PALISADES NUCLEAR PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By application dated August 22, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16235A195), as supplemented by letter dated September 8, 2016 (ADAMS Accession No. ML16252A351), Entergy Nuclear Operations, Inc. (ENO, the licensee), submitted a licensee amendment request (LAR) to modify the existing License Condition (LC) 2.C.(4) and Technical Specification (TS) Surveillance Requirement (SR) 3.1.4.3 for the Palisades Nuclear Plant (PNP).

Specifically, ENO proposed to replace the existing LC 2.C.(4) with a new LC that states that performance of TS SR 3.1.4.3 is not required for Control Rod Drive 13 (CRD-13) during cycle 25 until the next entry into Mode 3. The replacement LC would also state that seal leakage on CRD-13 shall be repaired prior to entering Mode 2, following the next Mode 3 entry, and that the reactor shall be shut down if CRD-13 seal leakage exceeds 2 gallons per minute (gpm).

ENO also proposed to replace an associated note in TS SR 3.1.4.3. The replacement note states that TS SR 3.1.4.3 is not required to be performed or met for CRD-13 during cycle 25 provided CRD-13 is administratively declared immovable, but trippable, and TS Limiting Condition of Operation (LCO) 3.1.4, Condition D, is entered for CRD-13.

TS SR 3.1.4.3 is required to be performed every 92 days, providing confidence that all full-length control rods continue to be trippable on demand. Exercising a control rod may increase the risk of an existing seal degradation on CRD-13, thus causing excessive seal leakage and potentially resulting in a forced shutdown. The licensee's request is based upon prior surveillances indicating that the CRD-13 seals are leaking, and that the measured leak rate and leak-off temperature increase with each surveillance operation. Based on the post-test leak rate trending for CRD-13 of the current cycle and that for CRD-22 observed in 2009 and 2010, the licensee stated that the increasing leak rate and seal leak-off temperature would make it necessary to shut down and replace the CRD-13 seals soon after the next surveillance is

performed. The next refueling outage is scheduled to occur in the spring of 2017. There are two remaining surveillances due to be performed in cycle 25 (i.e., October 2016 and January 2017).

The existing LC 2.C.(4) and the note in TS SR 3.1.4.3 were previously approved by U.S. Nuclear Regulatory Commission (NRC) for PNP under Amendment No. 239 (ADAMS Accession No. ML101380534). The amendment allowed the CRD-22 testing required under TS SR 3.1.4.3 to be suspended because CRD-22 leakage was increasing with each surveillance operation. Since PNP is currently in operating cycle 25, the existing LC 2.C.(4) and the existing note in TS SR 3.1.4.3 concerning CRD-22 are obsolete, and are replaced by the proposed LC and the TS SR note concerning CRD-13 testing in cycle 25 to reflect the affected CRD and fuel cycle.

The NRC staff's original proposed no significant hazards consideration determination was published in the *Federal Register* on September 27, 2016 (81 FR 66306).

2.0 REGULATORY EVALUATION

The following explains the applicability of General Design Criteria (GDC) for PNP. The construction permit for PNP was issued by the Atomic Energy Commission (AEC) on March 14, 1967, and an Interim Provisional Operating License was issued by the AEC on March 24, 1971. The plant GDC are discussed in the Updated Final Safety Analysis Report (UFSAR) Chapter 5.1, "General Design Criteria," with more details given in the applicable UFSAR sections. The AEC published the final rule that added Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," in the *Federal Register* (36 FR 3255) on February 20, 1971, with the rule effective on May 21, 1971. As discussed in the NRC's Staff Requirements Memorandum for SECY-92-223, dated September 18, 1992 (ADAMS Accession No. ML003763736), the Commission decided not to apply the final GDC to plants with construction permits issued prior to May 21, 1971. Therefore, the GDC which constitute the licensing bases for PNP are those in the UFSAR.

The licensee has made changes to the facility over the life of the plant that may have invoked the final GDC. The extent to which the final GDC have been invoked can be found in specific sections of the UFSAR and in other plant-specific design and licensing basis documentation.

The NRC staff identified the following regulatory requirements in its review of the LAR:

- The regulation in Appendix A to 10 CFR 50, GDC 25, "Protection system requirements for reactivity control malfunctions," states the following:

The protection system shall be designed to assure that specified acceptable fuel design limits [(SAFDLs)] are not exceeded for any single malfunction of the reactivity control systems, such as accidental withdrawal (not ejection or dropout) of control rods.

- The regulation in Appendix A to 10 CFR 50, GDC 28, "Reactivity limits," states the following:

The reactivity control systems shall be designed with appropriate limits on the potential amount and rate of reactivity increase to assure that the effects of postulated reactivity accidents can neither (1) result in damage to the reactor coolant pressure boundary [(RCPB)] greater than limited local yielding nor (2) sufficiently disturb the core, its support structures, or other reactor pressure vessel internals to impair significantly the capability to cool the core. These postulated reactivity accidents shall include consideration of rod ejection (unless prevented by positive means), rod dropout, steam line rupture, changes in reactor coolant temperature and pressure, and cold water addition.

- The regulation in 10 CFR 50.46, "Acceptance criteria for emergency core cooling system for light-water nuclear power reactors," states in part:

Each boiling or pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy or ZIRLO cladding must be provided with an emergency core cooling system (ECCS) that must be designed so that its calculated cooling performance following postulated loss-of-coolant accidents conforms to the criteria set forth in paragraph (b) of this section.

Alternatively, an ECCS evaluation model may be developed in conformance with the required and acceptable features of appendix K ECCS Evaluation Models.

- The regulations in section (c) of 10 CFR 50.36, "Technical specifications," requires the TS will include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) limiting conditions of operation; (3) SRs; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notifications; and (8) written reports.

As described in 10 CFR 50.36(c)(3), SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, the facility operation will be within safety limits, and that the limiting conditions for operation will be met.

3.0 TECHNICAL EVALUATION

The PNP TS SR 3.1.4.3 requires the movement of control rods, as per quarterly surveillance procedure QO-34, "Control Rod Exercising," every 92 days. The next such surveillance is scheduled for October 2016. This will be the fourth surveillance in the current cycle (cycle 25).

By application dated August 22, 2016, ENO stated that the next surveillance will likely result in a seal leakage rate and associated temperature that are high enough to require a forced maintenance shutdown to replace the CRD-13 seals. During each of the prior three surveillances, increasing levels of seal leakage have been recorded in CRD-13. Operating

experience has shown that exercising a control rod may increase the risk of an existing seal degradation on CRD-13, thus causing excessive seal leakage and potentially resulting in a forced shutdown. ENO indicated that the cycle 25 refueling outage is currently scheduled for the spring of 2017, and requested the NRC staff's approval to not perform SR 3.1.4.3 on CRD-13 for the two remaining surveillance tests required for cycle 25, to avoid a potential forced shutdown. ENO has supplied data obtained before and after three surveillances that indicate the CRD-13 seal leak rates increase following each surveillance. ENO indicated the post-test leak rate was 32.2 milliliters per minute (ml/min) following the most recent surveillance. This leakage is not near the Operational Decision Making Issue (ODMI) implementation action plan leak rate limit of 1200 ml/min (about 0.317 gpm), which is used as an entry point by PNP to initiate a plant shutdown. By letter dated August 29, 2016 (ADAMS Accession No. ML16238A030), the NRC staff requested ENO to provide the bases for the LAR statement indicating that the seal leakage from CRD-13 will increase to the extent that continued operation to the planned refueling outage is unlikely. In its response dated September 8, 2016, ENO provided the data for projected future CRD-13 leak rates with and without the remaining two required exercise surveillances.

Projected CRD-13 seal leak rates with the remaining required exercise surveillances are based on the performance of CRD-22 in 2010. As discussed in the application dated August 22, 2016, following the 2009 refueling outage, CRD-22 exhibited increasing seal leak rates. ENO submitted an LAR on March 31, 2010 (ADAMS Accession No. ML100920476), to suspend the exercise surveillance of CRD-22 for the remainder of the cycle. The CRD-22 leak rate had been measured at 400 ml/min following the most recent performance of the surveillance. The NRC approved the LAR on June 2, 2010, by Amendment No. 239. Following approval of the LAR, without further CRD-22 movement, the CRD-22 seal leak rate escalated and the reactor was shut down in June 2010 to replace the CRD-22 seals.

Projected CRD-13 seal leak rates without further surveillances is based on the current trend of CRD-13 seal leak rates and historical data. Figure 2 of the supplemental information provided by letter dated September 8, 2016, shows CRD-13 actual and projected seal leak rates. The data for the projected leak rates indicate that:

- (1) With the continued performance of the exercise surveillance during this cycle, the CRD-13 leak rate is projected to exceed the ODMI implementation action plan leak rate limit of 1200 ml/min and will likely require a plant shutdown to repair the degraded CRD seals; and
- (2) Without further performance of the exercise surveillance during this cycle, CRD-13 is projected to remain below the ODMI implementation action plan leak rate limit until the plant starts the spring 2017 refueling outage.

As shown in the supplement dated September 8, 2016, CRD-13 seal leak rate was measured at 32.2 ml/min and is increasing without exercising the control rod (CR). This seal leak rate is lower than the leak rate of 400 ml/min for CRD-22 following the exercise surveillance in February 2010, as documented in the LAR for CRD-22. ENO indicated that later in 2010, the CRD-22 leak rate increased quickly and resulted in an unplanned plant shutdown to replace the CRD-22 seals. ENO stated that if the exercise surveillance had been suspended earlier in the operating cycle, when CRD-22 leak rate was lower, an unplanned plant shutdown may have been avoided.

NRC Evaluation

Based on the results of the projected leak rates for CRD-13 with continued surveillance testing described above, and the shutdown experienced in 2010 resulting from a quick increase in the CRD-22 leak rate, the NRC staff concludes that it is reasonable for ENO to submit the LAR for CRD-13 at this time, with the current CRD-13 seal leak rate, in order to avoid an unplanned shutdown to repair the degraded seals.

3.1 Qualitative Risk Assessment

In support of its request to suspend SR 3.1.4.3 for movement exercise on CRD-13, ENO provided in its LAR a qualitative risk assessment, comparing the risks associated with a forced maintenance reactor shutdown to continued operation with a small leak of primary reactor coolant through the CRD-13 seal. As stated in Attachment 4 of the application dated August 22, 2016, ENO's assessment of plant transition risks considered the following plant conditions:

- Transition from full-power operation (mode 1) to hot standby (mode 3)
- Transition from hot standby (mode 3) to shutdown cooling entry and cooldown to cold shutdown (mode 5)
- Cold shutdown (mode 5) operation for the duration of the outage
- Transition from cold shutdown (mode 5) to shutdown cooling exit and heat-up to hot standby (mode 3)
- Transition from hot standby (mode 3) to full-power operation (mode 1)

For each plant transition condition, ENO discussed significant operator actions and changes in plant equipment availability, and listed key similarities and differences between operations at full-power and transition condition. ENO assessed the effect of each difference on plant transition risks, and identified the following significant risks associated with a forced maintenance reactor shutdown:

- (1) Reduction in available decay heat removal paths resulting from a vented primary coolant system and the unavailability of the steam generators at certain non-full-power plant operating states.
- (2) Increased frequency for a number of initiating events during manual transition through lower-power modes as compared to full power operation (e.g., loss of main feedwater, loss of rear bus offsite power, loss of shutdown cooling, etc.)

Based on its findings above, ENO indicated that a forced maintenance shutdown could challenge the plant safety systems, cause additional radiation exposure to the plant personnel, and degrade plant safety margins.

NRC Evaluation

The NRC staff reviewed ENO's assessment and found that it considered an adequate scope of the plant transition conditions; included key operator actions and applicable systems and controls associated with each plant transition condition; and reasonably identified the plant transition risks associated with a forced maintenance reactor shutdown. Therefore, the NRC staff concludes that the risk of a forced maintenance shutdown could be comparable to the risk of continued operation with two missed surveillances on CRD-13.

3.2 CRD-13 Trippability

As discussed in Chapter 3, "Reactor" of the UFSAR, the key safety function of CRDs is to trip the reactor and insert CRs into the core to achieve safe shutdown conditions. TS SR 3.1.4.3 is required to be performed every 92 days, providing confidence that full-length CRDs continue to be trippable.

In support of CRD-13 trippability, ENO provided in its LAR a discussion of the CRD design to the component level, including clutch, bearings, vapor seal, stem impingement washer, seal assembly, and driveshaft, and indicated that a leaking seal would not affect the rod's trippability.

Regarding the primary coolant system (PCS) operational leakage limit, PNP TS 3.4.13c requires that identified leakage be less than or equal to 10 gpm. In meeting the TS 3.4.13c limit, ENO stated that it set a 2-gpm leakage limit for CRD seal leakage in its PNP Abnormal Operating Procedure (AOP). The AOP requires a plant shutdown when the CRD seal leakage limit is exceeded.

The LAR also stated that PNP's operating experience does not record any instances in which the CRD-13 control rod failed to trip. In its supplemental letter dated September 8, 2016, ENO presented the recent leak rate history (shown in the following table) for four cases with CRD seal leakage increased up to 2182 ml/min, which is greater than the ODMI implementation action plan limit of 1200 ml/min. In all of these cases, the reactor was successfully tripped with all rods being fully inserted by gravity. ENO further indicated that in the plant's history, seal leakage never affected the ability to fully insert a control rod by gravity.

Date of CRD Leak Rate Measurement	CRD Leak Rate (ml/min)	Date of Plant Shutdown
8/5/2008	2182	8/5/2008
2/17/2009	1290	2/17/2009
6/24/2010	1650	6/24/2010
1/5/2012	800	1/5/2012

NRC Evaluation

The NRC staff notes that the surveillance procedure in question, QO-34, "Control Rod Exercising," is not the definitive test used to verify the CR's trip capability. QO-34, by moving the rod a small distance, can only imply the rod's trippability. The CRD system was credited for consequence mitigation in UFSAR Chapter 14, "Safety Analysis," events, and the total CR worth of all CRs inserted (with the most reactive CR stuck out of the core), was assumed as an input

representing an initial plant condition in the UFSAR Chapter 14 analysis. In general, UFSAR Chapter 14 analysis satisfy, in part, the requirements in GDC-25, GDC-28, and 10 CFR 50.46. The NRC staff considered that operation with CRD seal leakage is not a safety issue if the TS PCS operational leakage limits are met and the seal leakage does not impair the control rod's trip function. As discussed above, the AOP requires a plant shutdown when the CRD seal leakage limits is exceeded and operating experience has shown that seal leakage has never affected the ability to fully insert a control rod by gravity.

Based on the CRD design features and plant operating data discussed above, the NRC staff concludes there is reasonable assurance that CRD seal leakage would not increase the likelihood of a CR becoming untrippable. Thus, the NRC staff concluded that operation with CRD seal leakage is not a safety issue since (1) a PNP AOP limits the seal leakage to meet the PCS operational leakage limits specified in TS 3.4.13c, and (2) the plant data showing trippable CRDs adequately supported the validity of the UFSAR Chapter 14 analysis, thereby continuing to meet the GDC-25 requirements regarding the SAFDLs, the GDC-28 requirements regarding the RCPB limits, and the 10 CFR 50.46 requirement regarding the ECCS performance acceptance criteria.

3.3 TS Changes

The PNP TS SR 3.1.4.3 requires the movement of CRs, as per quarterly surveillance procedure QO-34 every 92 days. The LAR proposed change would revise the TS by replacing the note in TS SR 3.1.4.3. The replacement note states that TS SR 3.1.4.3 is not required to be performed or met for CRD-13 during cycle 25 provided CRD-13 is administratively declared immovable, but trippable, and TS LCO 3.1.4, Condition D, is entered for CRD-13. Specifically, the proposed change would delete the following note in TS SR 3.1.4.3:

-----NOTE-----
Not required to be performed or met for control
rod 22 during cycle 21 provided control rod 22 is
administratively declared immovable, but trippable
and Condition D is entered for control rod 22.

The proposed change would add the following note in TS SR 3.1.4.3:

-----NOTE-----
Not required to be performed or met for control
rod 13 during cycle 25 provided control rod 13 is
administratively declared immovable, but trippable
and Condition D is entered for control rod 13.

NRC Evaluation

The note allows ENO to not perform TS SR 3.1.4.3 for CRD-13 during the remainder of cycle 25. If ENO decides not to perform TS SR 3.1.4.3 for CRD-13, it would have to administratively declare CRD-13 to be immovable, but trippable and enter TS 3.1.4 Condition D.

With one full-length control rod immovable, but trippable, LCO 3.1.4 Condition D permits operation to continue until the next shutdown.

As discussed in Section 3.2 of this safety evaluation, the NRC staff considered that the surveillance procedure, QO-34, is not the definitive test used to verify the CR's trippability. QO-34, by moving the rod a small distance, can only imply the rod's trippability. Also, the NRC staff found that CRD seal leakage would not increase the likelihood of a CR becoming untrippable, and concluded that the trippable CRDs adequately supported the validity of the UFSAR Chapter 14 analysis.

In addition, the revised note in TS SR 3.1.4.3 is identical to the existing note with CRD-22 and cycle 21 changed to CRD-13 and cycle 25, respectively, reflecting the affected CRD and current fuel cycle. The replacement note would allow TS SR 3.1.4.3 to be not performed or met for CRD-13 during the remainder of cycle 25.

Based on the discussion in Sections 3.2 and 3.3 of this safety evaluation, the NRC found that: (1) the proposed note in TS SR 3.1.4.3 for CRD-13 during cycle 25 would not affect the UFSAR Chapter 14 analysis, thereby continuing to meet the GDC-25 requirements regarding the SAFDLs, the GDC-28 requirements regarding the RCPB limits, and the 10 CFR 50.46 requirement regarding the ECCS performance acceptance criteria; and (2) the revised note in TS SR 3.1.4.3 is identical to the existing note with changes reflecting the affected CRD and fuel cycle. In addition, the NRC staff reviewed the proposed change to verify the revised TS continues to contain the appropriate SR for the TS 3.1.4, "Control Rod Alignment." The staff concludes that the revised TS continue to provide the appropriate SR to ensure that the requirements of 10 CFR 50.36(c)(3) continue to be satisfied because the necessary quality of systems and components is maintained, and the limiting conditions for operation (LCO 3.1.4) will still be met. Therefore, the NRC staff concludes that the proposed note in TS SR 3.1.4.3, suspending the required CRD-13 movement tests for cycle 25, is acceptable.

3.4 LC Changes

ENO proposed an LAR to revise the PNP Renewed Facility Operating License to replace the existing LC 2.0.(4) with a new LC stating:

The following requirements shall apply to control rod drive CRD-13 during cycle 25:

- (a) Performance of Technical Specifications Surveillance Requirement SR 3.1.4.3 is not required for CRD-13 until the next entry into Mode 3.
- (b) Seal leakage on CRD-13 shall be repaired prior to entering Mode 2, following the next Mode 3 entry.
- (c) The reactor shall be shut down if CRD-13 seal leakage exceeds two gallons per minute.

NRC Evaluation

Part (a) of the LC is consistent with the acceptable revised note in TS SR 3.1.4.3 (see Section 3.3 of this safety evaluation), which allows ENO to not perform SR 3.1.4.3 for CRD-13 for the remainder of cycle 25. If ENO chooses to take this option, it would have to administratively declare CRD-13 to be immovable, but trippable and enter TS 3.1.4 Condition D. With one full-length control rod immovable, but trippable, LCO 3.1.4 Condition D allows operation to continue until the next shutdown. Therefore, part (a) of the LC is acceptable.

Part (b) of the LC restates the action required by the existing LCO 3.1.4 Condition D for one immovable, but trippable CR. Conditions D requires ENO to repair seal leakage CRD-13 prior to entering Mode 2 following next Mode 3 entry. Therefore, part (b) of the LC is acceptable.

Part (c) of the LC requires ENO to shut down the reactor, if CRD-13 seal leakage exceeds 2-gpm. The 2-gpm CRD seal leak rate limit is a PNP AOP value that requires a plant shutdown when exceeded and conservatively bounds the TS identified leakage limit of 10 gpm (see Section 3.2 of this safety evaluation). Therefore, part (c) of the LC is acceptable.

3.5 Conclusion

The NRC staff determined that the proposed changes to the note in TS SR 3.1.4.3, allowing suspension of the required CRD-13 movement tests for cycle 25, is acceptable based on the following NRC staff's findings: (1) the proposed note would not affect the UFSAR Chapter 14 analysis, thereby continuing to meet the GDC-25 requirements regarding the SAFDLs, the GDC-28 requirements regarding the RCPB limits, and the 10 CFR 50.46 requirement regarding the ECCS performance acceptance criteria; (2) the revised note is identical to the existing note with changes reflecting the affected CRD and current fuel cycle; and (3) the revised TS continue to provide the appropriate SR to ensure that the requirements of 10 CFR 50.36(c)(3) continue to be satisfied because the necessary quality of systems and components is maintained, and the limiting conditions for operation (LCO 3.1.4) will still be met. The NRC staff also determined that the revised LC 2.C.(4), allowing suspension of the CRD-13 movement test required by TS SR 3.1.4.3 during cycle 25 with associated action items regarding restoration of the CRD-13 and plant shutdown, is acceptable, since the NRC staff found that the revised LC is consistent with the revised note in TS SR 3.1.4.3 and existing TS 3.1.4 Condition D.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

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

As required by 10 CFR 50.91(a), an evaluation of the issue of no significant hazards consideration is presented below:

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

Response: No.

The proposed license amendment replaces an obsolete license condition concerning CRD-22 testing that applied only to operating cycle 21 with a new license condition to forgo the remaining two required surveillance tests of CRD-13 from the PNP TS surveillance requirement for partial movement every 92 days during cycle 25. Since CRD-13 remains trippable, the proposed license condition does not affect or create any accident initiators or precursors. As such, the proposed license condition does not increase the probability of an accident.

The proposed license amendment does not increase the consequences of an accident. The ability to move a full-length control rod by its drive mechanism is not an initial assumption used in the safety analyses. The safety analyses assume full-length control rod insertion, except the most reactive rod, upon reactor trip. The surveillance requirement performed during the last refueling outage verified control rod drop times are within accident analysis assumptions. ENO has determined that CRD seal leakage does not increase the likelihood of an untrippable control rod. The assumptions of the safety analyses will be maintained, and the consequences of an accident will not be increased.

Therefore, operation of the facility in accordance with the proposed license condition would not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed license amendment does not involve a physical alteration of any structure, system or component (SSC) or change the way any SSC is operated. The proposed license condition does not involve operation of any required SSCs in a manner or configuration differently from those previously recognized or evaluated. No new failure mechanisms would be introduced by the requested SR interval extension.

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

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

Response: No.

The proposed license amendment does not affect trippability of the control rod. It will have the same capability to mitigate an accident as it had prior to the proposed license condition.

Therefore, the proposed amendment would not involve a significant reduction in a margin of safety.

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

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified on October 14, 2016, of the proposed issuance of the amendment. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, or 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 (81 FR 66306, September 27, 2016). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment.

7.0 CONCLUSION

The Commission has concluded based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Sun

Date: October 28, 2016

A copy of our related safety evaluation is provided in Enclosure 2. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures:

1. Amendment No. 260 to DPR-20
2. Safety Evaluation

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DATE	10/28/16	10/12/16	10/3/16	10/14/16
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DATE	10/17/16	10/28/16	10/28/16	

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