



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

September 21, 2017

Mr. Joel P. Gebbie
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2 – ISSUANCE OF AMENDMENTS RE: LICENSE AMENDMENT REQUEST REGARDING TECHNICAL SPECIFICATION 3.9.3, CONTAINMENT PENETRATIONS (CAC NOS. MF8931 AND MF8932)

Dear Mr. Gebbie:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 337 to Renewed Facility Operating License No. DPR-58 and Amendment No. 319 to Renewed Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant (CNP), Unit Nos. 1 and 2, respectively. The amendments consist of changes to the technical specifications (TSs) in response to your application dated December 14, 2016, as supplemented by letter dated May 26, 2017.

The amendments revise the note regarding applicability of the limiting condition for operation for CNP TS 3.9.3, "Containment Penetrations."

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

Sincerely,

A handwritten signature in black ink, appearing to read "Jennivine Rankin".

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

Docket Nos. 50-315 and 50-316

Enclosures:

1. Amendment No. 337 to DPR-58
2. Amendment No. 319 to DPR-74
3. Safety Evaluation

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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 337
License No. DPR-58

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated December 14, 2016, as supplemented by letter dated May 26, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (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 this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-58 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 337, are hereby incorporated in this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "David J. Wrona for".

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

Attachment: Changes to Renewed
Facility Operating License No. DPR-58
and Technical Specifications

Date of Issuance: September 21, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 337

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

RENEWED FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

Replace the following page of the Renewed Facility Operating License No. DPR-58 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

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

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and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

- (4) 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 without restriction to chemical or physical form, for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and 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) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not to exceed 3304 megawatts thermal in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 337, are hereby incorporated in this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Less than Four Loop Operation

The licensee shall not operate the reactor at power levels above P-7 (as defined in Table 3.3.1-1 of Specification 3.3.1 of Appendix A to this renewed operating license) with less than four reactor coolant loops in operation until (a) safety analyses for less than four loop operation have been submitted, and (b) approval for less than four loop operation at power levels above P-7 has been granted by the Commission by amendment of this license.

(4) Fire Protection Program

Indiana Michigan Power Company 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 licensee's amendment request dated July 1, 2011, as supplemented by letters dated September 2, 2011, April 27, 2012, June 29, 2012, August 9, 2012, October 15, 2012, November 9, 2012, January 14, 2013, February 1, 2013,

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

- LCO 3.9.3 The containment penetrations shall be in the following status:
- a. The equipment hatch is closed and held in place by four bolts;
 - b. One door in each air lock is capable of being closed; and
 - c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either:
 - 1. Closed by a manual or automatic isolation valve, blind flange, or equivalent; or
 - 2. Capable of being closed by an OPERABLE Containment Purge Supply and Exhaust System.

-----NOTE-----

Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend movement of irradiated fuel assemblies within containment.	Immediately



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WASHINGTON, D.C. 20555-0001

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 319
License No. DPR-74

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated December 14, 2016, as supplemented by letter dated May 26, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (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 this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-74 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 319, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "David J. Wrona for".

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

Attachment: Changes to Renewed
Facility Operating License No. DPR-74
and Technical Specifications

Date of Issuance: September 21, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 319

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

RENEWED FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Replace the following page of the Renewed Facility Operating License No. DPR-74 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

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

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INSERT

3.9.3-1

radiation monitoring equipment calibration, and as fission detectors in amounts as required;

- (4) 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 without restriction to chemical or physical form, for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and 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) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not to exceed 3468 megawatts thermal in accordance with the conditions specified herein and in Attachment 1 to the renewed operating license. The preoperational tests, startup tests and other items identified in Attachment 1 to this renewed operating license shall be completed. Attachment 1 is an integral part of this renewed operating license.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 319, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Additional Conditions

(a) Deleted by Amendment No. 76

(b) Deleted by Amendment No. 2

(c) Leak Testing of Emergency Core Cooling System Valves

Indiana Michigan Power Company shall prior to completion of the first inservice testing interval leak test each of the two valves in series in the

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

- LCO 3.9.3 The containment penetrations shall be in the following status:
- a. The equipment hatch is closed and held in place by four bolts;
 - b. One door in each air lock is capable of being closed; and
 - c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either:
 - 1. Closed by a manual or automatic isolation valve, blind flange, or equivalent; or
 - 2. Capable of being closed by an OPERABLE Containment Purge Supply and Exhaust System.

-----NOTE-----

Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend movement of irradiated fuel assemblies within containment.	Immediately



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 337 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-58

AND

AMENDMENT NO. 319 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By application dated December 14, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16351A198), as supplemented by letter dated May 26, 2017 (ADAMS Accession No. ML17151A315), Indiana Michigan Power Company (I&M, the licensee) requested license amendments for the Donald C. Cook Nuclear Plant (CNP), Unit Nos. 1 and 2. The licensee requested to revise the note regarding applicability of the limiting condition for operation (LCO) for CNP Technical Specification (TS) 3.9.3, "Containment Penetrations."

The supplemental letter dated May 26, 2017, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC or Commission) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on February 28, 2017 (82 FR 12133).

2.0 REGULATORY EVALUATION

The NRC staff considered the following regulatory requirements and guidance in its review of the license amendment request (LAR).

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.67, "Accident source term," paragraph (b)(2) states that the NRC may issue the amendment only if the applicant's analysis demonstrates with reasonable assurance that:

- (i) An individual located at any point on the boundary of the exclusion area for any 2-hour period following the onset of the postulated fission product

release, would not receive a radiation dose in excess of 0.25 Sv [sievert] (25 rem [roentgen equivalent man])^[1] total effective dose equivalent (TEDE).

- (ii) An individual located at any point on the outer boundary of the low population zone, who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage), would not receive a radiation dose in excess of 0.25 Sv (25 rem) [TEDE].
- (iii) Adequate radiation protection is provided to permit access to and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 0.05 Sv (5 rem) [TEDE] for the duration of the accident.

Paragraph 50.36(c) of 10 CFR requires TSs to include items in the following categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) LCOs; (3) surveillance requirements; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notification; and (8) written reports. The regulation does not specify the particular requirements to be included in a plant's TSs.

The construction permits for CNP were issued and the majority of construction was completed prior to issuance of Appendix A, General Design Criteria (GDC), to 10 CFR Part 50, in 1971 by the Atomic Energy Commission. CNP was designed and constructed to comply with the GDC as proposed on July 11, 1967. Section 1.4 of the CNP updated final safety analysis report (UFSAR) (ADAMS Accession No. ML16336A246), "Plant Specific Design Criteria (PSDC)," defines the principal criteria and safety objectives for the design of CNP. PSDC Criterion 11 relates to the radiation protection of the control room. In addition, Section 1.4.10 of the UFSAR describes the applicability of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," to CNP. Specifically, the UFSAR states that GDC 19, "Control room," is applicable to CNP.

Appendix A to 10 CFR Part 50, GDC 19, "Control room," states, in part, that:

A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem [0.05 Sv] whole body, or its equivalent to any part of the body, for the duration of the accident.

¹ The use of 0.25 Sv (25 rem) TEDE is not intended to imply that this value constitutes an acceptable limit for emergency doses to the public under accident conditions. Rather, this 0.25 Sv (25 rem) TEDE value has been stated in this section as a reference value, which can be used in the evaluation of proposed design basis changes with respect to potential reactor accidents of exceedingly low probability of occurrence and low risk of public exposure to radiation.

The NRC staff considered the following regulatory guidance in its review of the LAR.

- NUREG-1431, "Standard Technical Specifications [STS], Westinghouse Plants, Revision 4.0," Volume 1 and Volume 2 (ADAMS Accession Nos. ML12100A222 and ML12100A228, respectively), dated April 2012, which contain the improved STS for Westinghouse plants. The improved STS were developed based on the criteria in the Commission's "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors," dated July 22, 1993 (58 FR 39132), which were subsequently codified by changes to 10 CFR 50.36 (final rule published on July 19, 1995; 60 FR 36953). Licensees adopting portions of the improved STS to existing technical specifications should adopt all related requirements, as applicable, to achieve a high degree of standardization and consistency.
- NUREG-0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition," Section 15.0.1, Revision 0, "Radiological Consequence Analyses Using Alternative Source Terms," (ADAMS Accession No. ML003734190), dated July 2000, which provides guidance to the NRC staff for the review of alternative source term amendment requests. SRP 15.0.1 states that the NRC reviewer should evaluate the proposed change against the guidance in Regulatory Guide (RG) 1.183.
- RG 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," (ADAMS Accession No. ML003716792), dated July 2000, which provides the methodology for analyzing the radiological consequences of several design basis accidents to show compliance with 10 CFR 50.67. RG 1.183 provides guidance to licensees on acceptable application of alternative source term (AST) (also known as the accident source term) submittals, including acceptable radiological analysis assumptions for use in conjunction with the accepted AST.

License Amendment No. 332 (Unit No. 1) and License Amendment No. 314 (Unit No. 2), "Donald C. Cook Nuclear Plant, Units 1 and 2 - Issuance of Amendments RE: Adoption of [Technical Specifications Task Force] TSTF-490, Rev. 0, 'Deletion of E-Bar Definition and Revision to Reactor Coolant System Specific Activity Technical Specification' and Implementation of Full-Scope Alternative Source Term (CAC Nos. MF5184 and MF5185)," (ADAMS Accession No. ML16242A111), dated October 20, 2016, implemented an AST methodology for analyzing the radiological consequences of eight design basis accidents (DBAs) using RG 1.183. The NRC staff also considered relevant information in Chapter 14 of the CNP UFSAR, which describes the DBAs and the evaluation of their radiological consequences. Chapter 14 of the CNP UFSAR can be found at ADAMS Accession Nos. ML17089A435 and ML17093A812.

License Amendment No. 259 (Unit No. 1) and License Amendment No. 242 (Unit No. 2), "Donald C. Cook Nuclear Plant, Units 1 and 2 - Issuance of Amendments (TAC Nos. MB1973 and MB1974)," (ADAMS Accession No. ML013300177), dated November 21, 2001, among other things, modified TS 3/4.9.4 (current TS 3.9.3) to add the option to use containment penetration closure methods that are equivalent to those that are required by the TS during movement of irradiated fuel assemblies within containment.

The NRC staff considered the reference values in 10 CFR 50.67, the accident specific guideline values in Regulatory Position 4.4 of RG 1.183, and Table 1 of NUREG-0800, Section 15.0.1.

3.0 TECHNICAL EVALUATION

3.1 Licensee Request

CNP TS LCO 3.9.3.c requires, during movement of irradiated fuel assemblies within containment, that each containment penetration providing direct access from the containment atmosphere to the outside atmosphere either be closed by a manual or automatic isolation valve, blind flange, or equivalent; or be capable of being closed by an operable containment purge supply and exhaust system. The requirement for containment penetration closure ensures that a release of radioactive material as the result of a fuel handling accident (FHA) within containment will not escape to the environment. CNP TS 3.9.3 has an LCO note which states:

Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere via the auxiliary building vent may be unisolated under administrative controls.

License Amendment No. 259 (Unit No. 1) and License Amendment No. 242 (Unit No. 2), incorporated the current LCO note stated above into TS 3.9.3. The note was based on the FHA analysis in effect at that time and the criteria in TSTF-312, Revision 1, "Administratively Controlled Containment Penetrations," (now stated in the Bases for STS LCO 3.9.4 in NUREG-1431), which are:

- (1) confirmatory dose calculations of a fuel handling accident as approved by the NRC staff which indicate acceptable radiological consequences and
- (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident (even though the containment fission product control function is not required to meet acceptable dose consequences) that the open air lock can and will be promptly closed following containment evacuation and that the open containment penetration(s) can and will be promptly closed.

The TS LCO 3.9.3 note was added with the restriction related to penetration flow paths that exit via the auxiliary building vent because the CNP FHA analysis for control room dose in effect at the time assumed that all activity released from containment would pass through the auxiliary building vent. The analysis at that time did not bound releases from containment penetrations that do not communicate with the auxiliary building and therefore, the change was limited to those penetrations that communicate with the auxiliary building vent.

Based on the AST accident analysis for the FHA in containment, the licensee proposes to revise the TS LCO 3.9.3 note to remove the restriction and allow containment penetrations providing direct access from the containment atmosphere to the outside atmosphere to be open under administrative control. The proposed revised note to TS LCO 3.9.3 would state:

Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

3.2 NRC Staff Analysis

As part of the current review, the NRC staff reviewed its safety evaluation (SE) issued as part of License Amendment Nos. 332 and 314 to determine (1) whether the confirmatory dose calculations for the AST FHA indicate acceptable and bounding radiological consequences and (2) whether commitments were made by the licensee to implement acceptable administrative procedures that ensure, in the event of an FHA, that the open containment penetration(s) can and will be promptly closed.

3.2.1 Radiological Consequence

License Amendment Nos. 332 and 314 implemented an AST methodology to analyze the radiological consequences of eight DBAs using RG 1.183. The FHA was among the DBAs reanalyzed. The AST FHA analysis considers that an irradiated fuel assembly is dropped during fuel handling in both the containment building without containment integrity established, and in the auxiliary building with the fuel handling area exhaust ventilation in service. Fission products released from the damaged fuel pass through the overlaying water in the reactor cavity or spent fuel pool and are released directly to the outside atmosphere over a two hour period.

Consistent with RG 1.183, the licensee did not credit holdup or dilution of the released activity within the containment. The activity release location for the exclusion area boundary dose and the low population zone dose, otherwise known as the offsite dose consequences, is the surface of containment. With regard to the onsite dose consequences of an FHA to the control room personnel, the activity release location is a point on the external containment surface closest to the control room intakes. CNP TS 3.9.3 allows the personnel airlock to be open during movement of irradiated fuel assemblies within containment, and thus, establishes a flow path from containment through the personnel airlock into the adjacent auxiliary building. The AST FHA analysis did not analyze the dose contribution from this flow path. Following an FHA in containment, there exists a pathway for activity to migrate from the open containment airlock into the adjacent auxiliary building and eventually into the control room. Therefore, by email dated April 19, 2017 (ADAMS Accession No. ML17112A033), the NRC staff issued a request for additional information (RAI) for the licensee to explain how the potential contribution to the control room dose through the containment airlock is accounted for in, or bounded by, the AST FHA dose consequence analysis of record. The licensee responded to the RAI by letter dated May 26, 2017, and stated:

The FHA dose consequence analysis of record... models the most limiting credible dose release-receptor pair for a FHA occurring inside containment. The auxiliary building is procedurally maintained at a negative pressure with respect to atmospheric pressure to ensure adequate exhaust through the plant vent. Therefore, for releases from containment into the auxiliary building (including those through the containment airlock), the only credible release point for radionuclide transport is the plant vent.

...the dose consequence analysis of a FHA inside containment modeled a release which was assumed to be a point on the external containment surface closest to the control room intakes. ...the corresponding containment "closest point" atmospheric dispersion factors are limiting in comparison to the atmospheric dispersion factors derived for the release from the plant vent. As the most limiting atmospheric dispersion factors (containment "closest point") were utilized in the analysis, a release resulting from a FHA in containment

released into the auxiliary building with eventual release from the plant vent would be bounded by the analysis...

The NRC staff reviewed the licensee's response and has determined that the atmospheric dispersion factors associated with the closest point on the Unit No. 1 or Unit No. 2 containment are more limiting than those associated with the plant vent, and, therefore, the resultant radiological dose using the atmospheric dispersion factors associated with the closest point on the Unit No. 1 or Unit No. 2 containment would bound those associated with the plant vent.

In addition, removing the restriction from the TS LCO 3.9.3 note will allow penetrations that do not exit through the auxiliary building vent but are in the auxiliary building to be open. Following an FHA in containment, these penetrations provide a pathway for activity to migrate from the containment into the adjacent auxiliary building and eventually into the control room. The AST FHA analysis does not analyze the dose contribution from these flow paths. Therefore, by email dated April 19, 2017, the NRC staff requested that the licensee explain how these potential contribution pathways to the control room dose are accounted for in, or bounded by, the AST FHA dose consequence analysis of record. The licensee responded to the RAI by letter dated May 26, 2017, and stated:

...the only credible ultimate release point for radionuclide transport for a FHA inside containment released into the auxiliary building is the plant vent. The FHA dose consequence analysis of record... models the most limiting credible dose release-receptor pair for a FHA occurring inside containment, which is assumed to be a point on the external containment surface closest to the control room intakes. There are no new containment penetration allowances introduced by this License Amendment that exit through the Auxiliary Building Vent.

The NRC staff reviewed the licensee's response and has determined that, because there are no new containment penetration allowances introduced by the licensee's LAR that exit through the Auxiliary Building Vent, the licensee's current NRC-approved FHA dose consequence analysis of record remains bounding and is not impacted by this proposed change. Therefore, the proposed changes are acceptable with regard to the onsite dose consequences of an FHA inside containment.

The approved AST FHA assumes the containment integrity is not established (containment does not isolate), thus, there is no mitigation of the radioactivity release. In addition, the changes proposed in this LAR have no impact on the AST offsite dose consequences for an FHA. Therefore, the proposed changes are acceptable with regard to the offsite dose consequences of an FHA inside containment.

Therefore, the NRC staff concludes that the radiological consequences of an FHA in containment would continue to be bounded by the doses estimated in the previously performed and accepted AST FHA analysis. The NRC staff finds that there is reasonable assurance that the radiological consequences of an FHA inside containment would result in doses that meet the acceptance criteria of 10 CFR 50.67 and 10 CFR Part 50, Appendix A, GDC 19, as clarified in NUREG-0800, Section 15.0.1.

3.2.2 Administrative Procedures for Open Containment Penetrations

As part of the current review, the NRC staff reviewed its SE issued as part of License Amendment Nos. 259 and 242 to determine whether commitments were made by the licensee

to implement acceptable administrative procedures that ensure in the event of an FHA, that the open containment penetration(s) can and will be promptly closed. As stated in the SE, the NRC staff believes that the capability to isolate the containment penetrations in the event of an FHA is desirable in the interest of defense-in-depth. This is captured in footnote 3 of RG 1.183, Appendix B, which is the NRC staff's guidance to licensees on acceptable assumptions for evaluating the radiological consequences of an FHA. RG 1.183, footnote 3, applies to fuel handling accidents within an open containment and states:

The staff will generally require that technical specifications allowing such operations include administrative controls to close the airlock, hatch, or open penetrations within 30 minutes. Such administrative controls will generally require that a dedicated individual be present, with necessary equipment available, to restore containment closure should a fuel handling accident occur. Radiological analyses should generally not credit this manual isolation.

In License Amendment Nos. 259 and 242, the licensee committed to issue administrative controls, and the Bases for TS 3/4.9.4 were revised to state that appropriate personnel are aware of the open status of the penetration flow path during core alterations or movement of irradiated fuel in containment, and that specified individuals are designated and readily available to isolate the flow path in the event of an FHA. At the time, the NRC staff found this commitment to be acceptable. However, in the current LAR, the licensee did not discuss this past commitment or explain whether the new proposed containment penetration allowances will be added to or included in the past commitment, nor is there discussion of the AST FHA analysis's consistency with RG 1.183, footnote 3. Therefore, by email dated April 19, 2017, the NRC staff requested that the licensee describe the relationship of the past commitment to the new containment penetration allowances requested in its LAR and explain how the AST FHA analysis is consistent with RG 1.183, footnote 3. The licensee responded to the RAI by letter dated May 26, 2017, and stated:

The past commitment to allow containment penetrations to be opened while applying administrative controls as described in TS Bases 3.9.3 will apply to the new penetration allowances requested by the LAR. ...I&M previously committed to implement administrative controls by revising the bases for then T/S 3/4.9.4, which is currently TS Bases 3.9.3. ...the NRC approved I&M's commitment to incorporate the requirement for administrative controls into I&M's licensing basis by revising the TS Bases. This license amendment is not requesting a change in this previous commitment and will retain the TS Bases language, but will be modified to reflect the proposed change to the TS 3.9.3 Note. The TS Bases pages marked to show proposed changes for both Unit 1 and Unit 2 are included in Enclosures 3 and 4, respectively, to reflect the proposed change to TS 3.9.3 Note and to show the commitment that is currently reflected in the TS Bases 3.9.3. These administrative actions are not credited by the FHA analysis... and are thusly consistent with Regulatory Guide 1.183, Appendix B, Footnote 3.

Enclosures 3 and 4 of the letter dated May 26, 2017, provided revised TS Bases pages to be implemented with the associated changes. These pages were provided for information only and will be revised by the licensee in accordance with the TS Bases Control Program discussed in TS 5.5.12.

In License Amendment Nos. 259 and 242, the licensee stated that the procedural controls would require that specified personnel would be designated to maintain an awareness of the

open status of the containment penetrations during movement of irradiated fuel assemblies inside containment, and to be readily available to promptly close the open penetrations in the event of an accident. Based on this and the fact that the past commitment to allow containment penetrations to be open while applying administrative controls will apply to the new penetration allowances requested by this LAR, the NRC staff concludes that the administrative controls during refueling operations on the open containment penetrations with direct access to the outside atmosphere is acceptable.

3.3 Conclusion

The NRC staff finds the previous commitment from the licensee, which remains unchanged, to implement acceptable administrative procedures that ensure in the event of a refueling accident that the open containment personnel airlock can and will be promptly closed following containment evacuation, and that the open containment penetration(s) can and will be promptly closed acceptable.

The NRC staff reviewed the radiological impact of the licensee's proposed change to TS 3.9.3 on previously analyzed radiological consequences of the postulated FHA at CNP. The NRC staff finds that the licensee's proposed changes do not impact any of the methodologies, assumptions, or inputs of the radiological consequences analyses and that there is reasonable assurance that the licensee's estimates of the exclusion area boundary, low-population zone, and control room doses will remain unchanged and will continue to comply with the criteria stated above in Section 2.0. Based on these findings, the NRC staff concludes that the proposed change to CNP TS 3.9.3 is acceptable with regard to the radiological consequences of postulated design basis accidents.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendments on July 31, 2017. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 or change surveillance requirements. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration and there has been no public comment on such finding as published in the *Federal Register* on February 28, 2017 (82 FR 12133). Accordingly, the amendments meet 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 need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be

conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: K. Bucholtz, NRR/DRA/ARCB

Date of issuance: September 21, 2017

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2 – ISSUANCE OF AMENDMENTS RE: LICENSE AMENDMENT REQUEST REGARDING TECHNICAL SPECIFICATION 3.9.3, CONTAINMENT PENETRATIONS (CAC NOS. MF8931 AND MF8932) DATED SEPTEMBER 21, 2017

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