



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

July 11, 2019

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: TECHNICAL SPECIFICATION TASK FORCE (TSTF) TRAVELER-563, "REVISE INSTRUMENT TESTING DEFINITIONS TO INCORPORATE THE SURVEILLANCE FREQUENCY CONTROL PROGRAM" (EPID L-2019-LLA-0040)

Dear Mr. Gebbie:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 345 to Renewed Facility Operating License No. DPR-58 and Amendment No. 327 to Renewed Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The amendments consist of changes to the technical specifications in response to your application dated February 26, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19063A498).

The amendments adopt TSTF-563, "Revise Instrument Testing Definitions to Incorporate the Surveillance Frequency Control Program." TSTF-563 revises the TS definitions of Channel Calibration, Channel Operational Test, and Trip Actuating Device Operational Test.

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 be "Robert F. Kuntz", written over a circular stamp or mark.

Robert F. Kuntz, Senior 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. 345 to DPR-58
2. Amendment No. 327 to DPR-74
3. Safety Evaluation

cc: Listserv



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

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

DOCKET NO. 50-315

Amendment No. 345
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 February 26, 2019, 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.

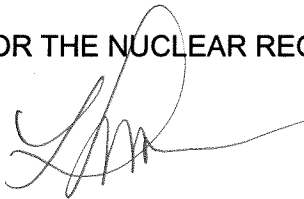
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-58 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 345, 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Lisa M. Regner, Acting Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and Technical Specifications

Date of Issuance: July 11, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 345

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

Replace the following pages of the Renewed Facility Operating License No. DPR-58 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

- 3 -

INSERT

- 3 -

Replace the following pages of Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

1.1-1

1.1-2

1.1-3

1.1-4

1.1-6

INSERT

1.1-1

1.1-2

1.1-3

1.1-4

1.1-6

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. 345, 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,

1.0 USE AND APPLICATION

1.1 Definitions

-----NOTE-----

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

<u>Term</u>	<u>Definition</u>
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
ACTUATION LOGIC TEST	An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit and the verification of the required logic output. The ACTUATION LOGIC TEST, as a minimum, shall include a continuity check of output devices.
AXIAL FLUX DIFFERENCE (AFD)	AFD shall be the difference in normalized flux signals between the top and bottom halves of a two section excore neutron detector.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

1.1 Definitions

CHANNEL OPERATIONAL TEST (COT)	A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Unit operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using thyroid dose conversion factors from Committed Dose Equivalent (CDE) or Committed Effective Dose Equivalent (CEDE) dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion."
DOSE EQUIVALENT XE-133	DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138 actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using effective

1.1 Definitions

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	<p>dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil."</p> <p>The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.</p>
INSERVICE TESTING PROGRAM	<p>The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).</p>
LEAKAGE	<p>LEAKAGE shall be:</p> <p>a. <u>Identified LEAKAGE</u></p> <ol style="list-style-type: none"> 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank, 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE, or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); <p>b. <u>Unidentified LEAKAGE</u></p> <p>All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and</p>

1.1 Definitions

c. Pressure Boundary LEAKAGE

LEAKAGE (except primary to secondary LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

MASTER RELAY TEST

A MASTER RELAY TEST shall consist of energizing all master relays in the channel required for channel OPERABILITY and verifying the OPERABILITY of each required master relay. The MASTER RELAY TEST shall include a continuity check of each associated required slave relay. The MASTER RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps.

MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

OPERABLE – OPERABILITY

A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

PHYSICS TESTS

PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are:

- a. Described in Chapter 13, Initial Tests and Operation, of the UFSAR;
- b. Authorized under the provisions of 10 CFR 50.59; or
- c. Otherwise approved by the Nuclear Regulatory Commission.

QUADRANT POWER TILT RATIO (QPTR)

QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.

1.1 Definitions

THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)	A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.



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

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

DOCKET NO. 50-316

Amendment No. 327
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 February 26, 2019, 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.

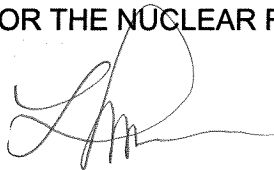
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-74 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 327, 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Lisa M. Regner, Acting Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and Technical Specifications

Date of Issuance: July 11, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 327

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Replace the following pages of the Renewed Facility Operating License No. DPR-74 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

- 3 -

INSERT

- 3 -

Replace the following pages of Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

1.1-1
1.1-2
1.1-3
1.1-6

INSERT

1.1-1
1.1-2
1.1-3
1.1-6

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. 327, 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

1.0 USE AND APPLICATION

1.1 Definitions

-----NOTE-----

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

<u>Term</u>	<u>Definition</u>
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
ACTUATION LOGIC TEST	An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit and the verification of the required logic output. The ACTUATION LOGIC TEST, as a minimum, shall include a continuity check of output devices.
AXIAL FLUX DIFFERENCE (AFD)	AFD shall be the difference in normalized flux signals between the top and bottom halves of a two section excore neutron detector.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

1.1 Definitions

CHANNEL OPERATIONAL TEST (COT)	A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Unit operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using thyroid dose conversion factors from Committed Dose Equivalent (CDE) or Committed Effective Dose Equivalent (CEDE) dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion."
DOSE EQUIVALENT XE-133	DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138 actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using effective

1.1 Definitions

	dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil."
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank, 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE, or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. <u>Unidentified LEAKAGE</u> All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and c. <u>Pressure Boundary LEAKAGE</u> LEAKAGE (except primary to secondary LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

1.1 Definitions

THERMAL POWER

THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

TRIP ACTUATING DEVICE
OPERATIONAL TEST
(TADOT)

A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 345 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-58

AND

AMENDMENT NO. 327 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 February 26, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19063A498), Indiana Michigan Power Company (the licensee), requested changes to the technical specifications (TS) for Donald C. Cook Nuclear Plant (CNP), Unit Nos. 1 and 2.

The amendment would revise the current instrumentation testing definitions of Channel Calibration, Channel Operational Test (COT), and Trip Actuation Device Operational Test (TADOT), to permit determination of the appropriate frequency to perform the surveillance requirement (SR) based on the devices being tested in each step. The proposed changes are based on Technical Specifications Task Force Traveler-563, Revision 0, "Revise Instrument Testing Definitions to Incorporate the Surveillance Frequency Control Program [SFCP]," dated May 10, 2017 (TSTF-563) (ADAMS Accession No. ML17130A819). The U.S. Nuclear Regulatory Commission (NRC or the Commission) issued a final safety evaluation (SE) approving TSTF-563, Revision 0, on December 4, 2018 (ADAMS Accession No. ML18333A144).

TSTF-563 revised the standard TS definitions of Channel Calibration, Channel Operational Test (COT), and Trip Actuation Device Operational Test (TADOT) for plants that have an approved Surveillance Frequency Control Program (SFCP). A SFCP was incorporated into the CNP, Unit Nos. 1 and 2, technical specification (TS) in a license amendment dated March 31, 2017 (ADAMS Accession No. ML17045A150). This amendment adopting TSTF-563 would allow the licensee to test the components or devices in each step, in accordance with its SFCP.

The licensee is not proposing any variations from the TS changes described in TSTF-563 or the applicable parts of the NRC staff's SE of TSTF-563.

2.0 REGULATORY EVALUATION

2.1 Description of Surveillance Frequency Control Program And Instrument Testing

The TS require the surveillances for instrumentation channels to be performed within the specified frequency, using any series of sequential, overlapping, or total channel steps. Adoption of TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF [Risk-Informed TSTF] Initiative 5b," in the license amendment dated March 31, 2017 (ADAMS Accession No. ML17045A150), revised the TS to relocate all periodic surveillance frequencies to licensee control. Changes to the relocated surveillance frequencies are made in accordance with the TS program referred to as the SFCP. The SFCP allows a new surveillance frequency to be determined for the channel but that frequency must consider all components in the channel and applies to the entire channel.

A typical instrument channel consists of many different components such as sensors, rack modules, and indicators. These components have different short-term and long-term performance (drift) characteristics, resulting in the potential for different calibration frequency requirements. Under the current TS, the most limiting component calibration frequency for the channel must be chosen when a revised frequency is considered under the SFCP. As a result, all components that makeup a channel must be calibrated at a frequency equal to the channel component with the shortest (i.e., most frequent) surveillance frequency.

Some channel components, such as pressure transmitters, are very stable with respect to drift and could support a substantially longer calibration frequency than the other components in the channel. Currently, the SRs in many plants are performed in steps (e.g., a pressure sensor or transmitter is calibrated during a refueling outage and the rack signal conditioning modules are calibrated while operating at power). The proposed change extends this concept to permit the surveillance frequency of each step to be determined under the SFCP based on the component(s) surveilled in the step instead of all components in the channel. This will allow each component to be tested at the appropriate frequency based on the component's long-term performance characteristics.

Allowing an appropriate surveillance frequency for performing a channel calibration on each component or group of components could reduce radiation dose associated with in-place calibration of sensors, reduce wear on equipment, reduce unnecessary burden on plant staff, and reduce opportunities for calibration errors.

2.2 Proposed Changes to the Technical Specifications

Currently, the Channel Calibration, COT, and TADOT, may be performed by any series of sequential, overlapping or total channel, steps. The proposed changes to the TS would revise the definitions of Channel Calibration, COT, and TADOT to indicate that the step must be performed within the most limiting frequency for the components included in that step by adding the phrase ", and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step" at the end of the last sentence of each definition.

The following paragraph denotes the changes to the Channel Calibration definition. Changes are shown in italics:

A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps, *and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.*

The following paragraphs denote the changes to the COT and TADOT definitions. Changes are shown in italics:

A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps, *and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.*

A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps, *and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.*

The various instrumentation functions in the TS require surveillances to verify the correct functioning of the instrument channel. The proposed change extends the definition of instrumentation channel components to permit the surveillance frequency of each step to be determined under the SFCP based on the component(s) surveilled in the step instead of all components in the channel. This will allow each component to be tested at the appropriate frequency based on the component's long-term performance characteristics.

The proposed changes in the definition for instrument testing would allow the licensee to control the frequency of associated components being tested in each step. The SR for the overall instrumentation channel remains unchanged. The proposed change has no effect on the design, fabrication, use, or methods of testing the instrumentation channels and will not affect the ability of the instrumentation to perform the functions assumed in the safety analysis.

These instrumentation testing definitions state that, "[t]he [test type] may be performed by means of any series of sequential, overlapping, or total channel steps." The surveillance frequency of these subsets would be established based on the characteristics of the

components in the step rather than the most limiting component characteristics in the entire channel. Each of these steps are evaluated in accordance with the SFCP.

2.3 Applicable Regulatory Requirements and Guidance

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36(a)(1), requires each applicant for a license authorizing operation of a utilization facility to include in the application proposed TS.

The regulation at 10 CFR 50.36(b) requires:

Each license authorizing operation of a . . . utilization facility . . . will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] § 50.34 ["Contents of applications; technical information"]. The Commission may include such additional technical specifications as the Commission finds appropriate.

The categories of items required to be in the TS are provided in 10 CFR 50.36(c). One such category is SRs, which are defined in 10 CFR 50.36(c)(3) as "requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

The regulation at 10 CFR 50.36(c)(5) requires TS to include administrative controls, which "are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner."

Adoption of TSTF-425 in the license amendment dated March 31, 2017, revised and relocated most periodic surveillance frequencies to licensee control. Changes to the relocated surveillance frequencies are made in accordance with the SFCP. The SFCP requires that changes to the relocated frequencies be made in accordance with NRC-approved Nuclear Energy Institute (NEI) topical report NEI 04-10 (ADAMS Accession No. ML071360456). The NRC approved NEI 04-10, Revision 1 on September 19, 2007 (ADAMS Accession No. ML072570267).

NEI 04-10 describes an evaluation process and a multi-disciplinary Independent Decision-making Panel (IDP) that considers the detailed evaluation of proposed surveillance frequency revisions. The evaluations are based on operating experience, test history, manufacturers' recommendations, codes and standards, and other deterministic factors, in conjunction with risk insights. The evaluation considers all components being tested by the SR. Process elements are included for determining the cumulative risk impact of the changes, updating the licensee's probabilistic risk assessment (PRA) models, and for imposing corrective actions, if necessary, following implementation of a revised frequency.

The NRC staff's guidance for the review of TS is in Chapter 16.0, "Technical Specifications," of NUREG-0800, Revision 3, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition" (SRP), March 2010 (ADAMS Accession No. ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared Standard Technical Specification (STS) for each of the LWR nuclear designs. Accordingly, the NRC staff's review includes consideration of whether the

proposed changes are consistent with the applicable reference STS (i.e., the current STS), as modified by NRC-approved Travelers. In addition, the guidance states that comparing the change to previous STS can help clarify the TS intent.

Regulatory Guide (RG) 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (ADAMS Accession No. ML100910006), describes an acceptable risk-informed approach for assessing the nature and impact of proposed permanent licensing basis changes by considering engineering issues and applying risk insights. This regulatory guide also provides risk acceptance guidelines for evaluating the results of such evaluations.

RG 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications" (ADAMS Accession No. ML100910008), describes an acceptable risk-informed approach specifically for assessing proposed TS changes.

RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (ADAMS Accession No. ML090410014), describes an acceptable approach for determining the technical adequacy of PRAs.

The NRC staff's guidance for evaluating the technical basis for proposed risk-informed changes is provided in SRP, Chapter 19, Section 19.2, "Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance" (ADAMS Accession No. ML071700658). The NRC staff's guidance on evaluating PRA technical adequacy is provided in SRP, Chapter 19, Section 19.1, Revision 3, "Determining the Technical Adequacy of Probabilistic Risk Assessment for Risk-Informed License Amendment Requests After Initial Fuel Load" (ADAMS Accession No. ML12193A107). More specific guidance related to risk-informed TS changes is provided in SRP, Chapter 16, Section 16.1, Revision 1, "Risk-Informed Decision Making: Technical Specifications" (ADAMS Accession No. ML070380228), which includes changes to surveillance test intervals (STIs) (i.e., surveillance frequencies) as part of risk-informed decision-making. Section 19.2 of the SRP references the same criteria as RG 1.177, Revision 1, and RG 1.174, Revision 2, and states that a risk-informed application should be evaluated to ensure that the proposed changes meet the following key principles:

- The proposed change meets the current regulations unless it explicitly relates to a requested exemption or rule change.
- The proposed change is consistent with the defense-in-depth philosophy.
- The proposed change maintains sufficient safety margins.
- When proposed changes result in an increase in risk associated with core damage frequency or large early release frequency, the increase(s) should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.
- The impact of the proposed change should be monitored using performance measurement strategies.

The NRC's, "Standard Technical Specifications, Westinghouse Plants," NUREG-1431, Volume 1, "Specifications," and Volume 2, "Bases," Revision 4.0, dated April 2012 (ADAMS

Accession Nos. ML12100A222 and ML12100A228, respectively), provides standard TS for Westinghouse-designed pressurized-water reactors.

3.0 TECHNICAL EVALUATION

Revising the frequency of a Channel Calibration, COT, and TADOT instrument channel under the SFCP requires assurance that component performance characteristics, such as drift between each test, will not result in undetected instrument errors that exceed the assumptions of the safety analysis and supporting instrument loop uncertainty calculations. These requirements are consistent with the methodology described in NEI 04-10, which the SFCP requires to be followed. The SFCP does not permit changes to the TS Allowable Values or Nominal Trip Setpoints; but allows only the surveillance frequency to be changed when determined permissible by NEI 04-10. Therefore, prior to extending the test intervals for an instrument channel component or components associated with a given calibration step, the component performance characteristics must be evaluated to verify the Allowable Value or Nominal Trip Setpoint will still be valid and to establish a firm technical basis supporting the extension. In addition, each change must be reviewed by the licensee to ensure the applicable uncertainty allowances are conservative (bounding) (e.g., sensor drift, rack drift, indicator drift). Documentation to support the changes shall be retained per the guidance in NEI 04-10.

Five key safety principles that must be evaluated before changing any surveillance frequency are identified in Section 3.0 of NEI 04-10. Principle 3 requires confirmation of the maintenance of safety margins, which, in this case, includes performance of deterministic evaluations to verify preservation of instrumentation trip setpoint and indication safety margins.

The evaluation methodology specified in NEI 04-10 also requires consideration of common cause failure effects and monitoring of the instrument channel component performance following the frequency change to ensure channel performance is consistent with the analysis to support an extended frequency.

The method of evaluating a proposed surveillance frequency change is not dependent on the number of components in the channel. Each step needs to be evaluated to determine the acceptable surveillance frequency for that step. The proposed change to permit changing the surveillance frequency of channel component(s) does not affect the test method or evaluation method. The requirement to perform a Channel Calibration, Channel Functional Test, COT, or TADOT, on the entire channel is not changed.

For example, an evaluation in accordance with NEI 04-10 may determine that a field sensor (e.g., a transmitter) should be calibrated every 48 months, the rack modules should be calibrated every 30 months, and the indicators should be calibrated every 24 months. Under the current TS requirements, all devices in the channel must be calibrated every 24 months. However, under the proposed change, sensors, rack modules, and indicators would be calibrated at the appropriate frequency for the tested devices. As required by the Channel Calibration definition, the test would still encompass all devices in the channel required for channel operability.

The NEI 04-10 methodology is used to evaluate surveillance frequency changes to determine if such SR extensions could be applied. Process elements are used to determine the cumulative risk impact of changes, updating the PRA, and imposition of corrective actions, if needed, following implementation. Several steps are required by NEI 04-10, Step 7, to be evaluated prior to determining the acceptability of changes. These steps include history of surveillance

tests, industry and plant specific history, impact on defense-in-depth, vendor recommendations, required test frequencies for the applicable codes and standards, ensuring that plant licensing basis would not be invalidated and other factors. The NRC staff finds these measures acceptable in determining the SR extensions.

In addition, Step 16 of Section 4.0 of NEI 04-10 requires an IDP to review the cumulative impact of all STI changes over a period of time. This is also required by RGs 1.174 and 1.177. The IDP is composed of the site Maintenance Rule Expert Panel, Surveillance Test Coordinator, and Subject Matter Expert, who is a cognizant system manager or component engineer. Based on the above information, the NRC staff finds that the setpoint changes will be tracked in an acceptable manner.

Licensees with an SFCP may currently revise the surveillance frequency of instrumentation channels. The testing of these channels may be performed by means of any series, sequential, overlapping, or total channel steps. However, all required components in the instrumentation channel must be tested in order for the entire channel to be considered Operable.

The NRC staff notes that industry practice is to perform instrument channel surveillances, such as Channel Calibrations and Channel Functional Tests, using separate procedures based on the location of the components. Each of these procedures may be considered a "step." The results of all these procedures are used to satisfy the SR using the existing allowance to perform it "by means of any series of sequential, overlapping, or total channel steps." The proposed changes would allow for determining an acceptable surveillance frequency for each step.

The NRC staff notes that the NEI 04-10 methodology includes the determination of whether the structure, system, and components (SSCs) affected by a proposed change to a surveillance frequency are modeled in the PRA. Where the SSC is directly or implicitly modeled, a quantitative evaluation of the risk impact may be carried out. The methodology adjusts the failure probability of the impacted SSCs based on the proposed change to the surveillance frequency. Where the SSC is not modeled in the PRA, bounding analyses are performed to characterize the impact of the proposed change to the surveillance frequency. Potential impacts on the risk analyses due to screening criteria and truncation levels are addressed by the requirements for PRA technical adequacy, consistent with the guidance contained in RG 1.200, and by sensitivity studies identified in NEI 04-10. The licensee is not proposing to change the methodology, or the acceptance criteria for extending STIs, and licensees will need to change in the frequency for performing each of the steps in the instrumentation surveillance test per the methodology in NEI 04-10.

Therefore, the NRC staff concludes that the proposed change determine an acceptable test frequency for individual steps within instrumentation channel surveillance tests is acceptable because any extended STIs will be developed within the established constraints of the SFCP and NEI 04-10.

The regulatory requirements in 10 CFR 50.36 are not specific regarding the frequency of performing surveillance tests. The proposed change only affects the frequency of performance and does not affect the surveillance testing method or acceptance criteria. Therefore, the proposed change is consistent with the surveillance testing requirements of 10 CFR 50.36.

PRA Acceptability

The guidance in RG 1.200 states that the quality of a licensee's PRA should be commensurate with the safety significance of the proposed TS change and the role the PRA plays in justifying the change. That is, the greater the change in risk or the greater the uncertainty in that risk as a result of the requested TS change, or both, the more rigor that should go into ensuring the quality of the PRA.

The NRC staff will have performed an assessment of the PRA models used to support the approved SFCP that uses NEI 04-10, using the guidance of RG 1.200 to assure that the PRA models are capable of determining the change in risk due to changes to surveillance frequencies of SSCs, using plant-specific data and models. Capability Category II of the NRC-endorsed PRA standard is the target capability level for supporting requirements for the internal events PRA for this application. Any identified deficiencies to those requirements are assessed further to determine any impacts to proposed decreases to surveillance frequencies, including the use of sensitivity studies where appropriate, in accordance with NEI 04-10.

The SFCP permits revising of the surveillance frequency for instrumentation channels. The NRC staff evaluated whether NEI 04-10 can be applied to subsets in an instrument channel when the SFCP currently specifies a surveillance interval that is applied to the entire channel. The NRC staff notes that the current channel surveillance may be performed by means of any series of sequential, overlapping, or total channel steps. In practice, this means that a channel is divided into subsets and each subset is tested separately. Therefore, the current instrument channel testing is already composed of a sequence of individual tests.

The instrument function may be modeled in the PRA differently depending on the site and the function (e.g., channel may be modeled individually, subsets may be modeled, or the channel function may be modeled as a single entity). There are different steps through the evaluation methodology in NEI 04-10 that could be used based on the different PRA modeling approaches. The appropriate modeling of these different approaches is included in the NRC staff's review of the PRA modeling during the review of the application to implement an SFCP that uses NEI 04-10.

The licensee is using a PRA that was used to support their application that implemented an SFCP that uses NEI 04-10. The amendment will change the capability of the licensee to change the surveillance frequency of an entire channel to now change the frequency of each subset of the channel. The NRC staff finds that changes to the surveillance frequency caused by defining and using individual, testable component subsets can be appropriately evaluated with the current SFCP and the current PRAs. The NRC staff finds that the risk-informed methodology review and the PRA acceptability review that was performed during the review of the licensee's application to implement an SFCP that uses NEI 04-10 is adequate.

The NRC staff determined that the proposed changes to the TS meet the standards for TS in 10 CFR 50.36(b). The regulations at 10 CFR 50.36 require that TS include items in specified categories, including SRs. The proposed changes modify the definitions applicable to instrumentation channel components but do not alter the technical approach that was approved by the NRC in NEI 04-10, and the TS, as revised, continue to specify the appropriate SRs for tests and inspections to ensure the necessary quality of affected SSCs is maintained.

Additionally, the changes to the TS were reviewed and found to be technically clear and consistent with customary terminology and format in accordance with SRP Chapter 16.0. The

NRC staff reviewed the proposed changes against the regulations and concludes that the changes continue to meet the requirements of Sections 50.36(b), 50.36(c)(3), and 50.36(c)(5), of 10 CFR, for the reasons discussed above, and thus provide reasonable assurance that adoption of these TS will have the requisite requirements and controls to operate safely. Therefore, the NRC staff concludes that the proposed TS changes are acceptable.

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 May 13, 2019. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

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 (84 FR 14151). 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: R. Kuntz, NRR

Date of Issuance: July 11, 2019

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS RE: TECHNICAL SPECIFICATION TASK FORCE (TSTF) TRAVELER 563, "REVISE INSTRUMENT TESTING DEFINITIONS TO INCORPORATE THE SURVEILLANCE FREQUENCY CONTROL PROGRAM" (EPID L-2019-LLA-0040) JULY 11, 2019

DISTRIBUTION:

PUBLIC
 PM File Copy
 RidsNrrDorLpl3 Resource
 RidsNrrPMDCCook Resource
 RidsNrrLASRohrer Resource
 RidsACRS_MailCTR Resource
 RidsNrrDssStsb Resource
 RidsRgn3MailCenter Resource

ADAMS Accession No.: ML19134A355

* via e-mail

OFFICE	DORL/LPL3/PM	DORL/LPL3/LA	DSS/STSB/BC(A)
NAME	RKuntz	SRohrer	PSnyder*
DATE	05/15/19	05/15/19	06/7/19
OFFICE	OGC NLO w/comments	DORL/LPL3/BC(A)	DORL/LPL3/PM
NAME	JScro*	LRegner	RKuntz
DATE	06/25/19	07/11/19	07/11/19

OFFICIAL RECORD COPY