



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

September 16, 2022

Mr. David B. Hamilton  
Executive Vice President and Chief  
Nuclear Officer  
Energy Harbor Nuclear Corp.  
168 E. Market Street  
Akron, OH 44308-2014

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2, DAVIS-BESSE  
NUCLEAR POWER STATION, UNIT NO. 1, AND PERRY NUCLEAR POWER  
PLANT, UNIT NO. 1 – ISSUANCE OF AMENDMENTS REGARDING  
ADOPTION OF TSTF-554, "REVISE REACTOR COOLANT LEAKAGE  
REQUIREMENTS" (EPID L-2021-LLA-0019)

Dear Mr. Hamilton:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the following enclosed amendments in response to the Energy Harbor Nuclear Corp. (EHNC or the licensee) application dated October 19, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21292A274):

1. Amendment No. 318 to Renewed Facility Operating License No. DPR-66 for Beaver Valley Power Station (BVPS), Unit No. 1;
2. Amendment No. 209 to Renewed Facility Operating License No. NPF-73 for BVPS, Unit No. 2;
3. Amendment No. 303 to Renewed Facility Operating License No. NPF-3, for Davis-Besse Nuclear Power Station, Unit No. 1;
4. Amendment No. 198 to Renewed Facility Operating License No. NPF-58 for Perry Nuclear Power Plant, Unit No. 1.

The amendments revise the reactor coolant leakage requirements in the technical specifications for each facility based on Technical Specifications Task Force (TSTF) Traveler TSTF-554, Revision 1, "Revise Reactor Coolant Leakage Requirements" (ML20016A233).

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

Sincerely,

**/RA/**

Scott P. Wall, Senior Project Manager  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-334, 50-412,  
50-346, and 50-440

Enclosures:

1. Amendment No. 318 to DPR-66
2. Amendment No. 209 to NPF-73
3. Amendment No. 303 to NPF-3
4. Amendment No. 198 to NPF-58
5. Safety Evaluation
6. Notice and Environmental Finding

cc: Listserv



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

ENERGY HARBOR NUCLEAR CORP.

ENERGY HARBOR NUCLEAR GENERATION LLC

DOCKET NO. 50-334

BEAVER VALLEY POWER STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 318  
Renewed License No. DPR-66

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Energy Harbor Nuclear Corp., acting on its own behalf and as agent for Energy Harbor Nuclear Generation LLC\* (the licensees), dated October 19, 2021, 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.

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\* Energy Harbor Nuclear Corp. is authorized to act as agent for Energy Harbor Nuclear Generation LLC and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

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-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 318, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Nancy L. Salgado, Chief  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility  
Operating License and Technical  
Specifications

Date of Issuance: September 16, 2022



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

ENERGY HARBOR NUCLEAR CORP.  
ENERGY HARBOR NUCLEAR GENERATION LLC  
DOCKET NO. 50-412  
BEAVER VALLEY POWER STATION, UNIT 2  
AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 209  
Renewed License No. NPF-73

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Energy Harbor Nuclear Corp., acting on its own behalf and as agent for Energy Harbor Nuclear Generation LLC\* (the licensee), dated October 19, 2021, 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.

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\* Energy Harbor Nuclear Corp. is authorized to act as agent for Energy Harbor Nuclear Generation LLC and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

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. NPF-73 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 209, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto and hereby incorporated in the license. Energy Harbor Nuclear Corp. 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 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Nancy L. Salgado, Chief  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility  
Operating License and Technical  
Specifications

Date of Issuance: September 16, 2022

ATTACHMENT TO LICENSE AMENDMENT NOS. 318 AND 209

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

RENEWED FACILITY OPERATING LICENSE NOS. DPR-66 AND NPF-73

DOCKET NO. 50-334 AND 50-412

Replace the following page of the Renewed Facility Operating License DPR-66 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE

Page 3

INSERT

Page 3

Replace the following page of the Renewed Facility Operating License NPF-73 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE

Page 4

INSERT

Page 4

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

REMOVE

1.1-3  
3.4.13-1

INSERT

1.1-3  
3.4.13-1

- (3) Energy Harbor Nuclear Corp., pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - (4) Energy Harbor Nuclear Corp., 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 calibration or associated with radioactive apparatus or components;
  - (5) Energy Harbor Nuclear Corp., pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the 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 1: 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  
Energy Harbor Nuclear Corp. is authorized to operate the facility at a steady state reactor core power level of 2900 megawatts thermal.
  - (2) Technical Specifications  
The Technical Specifications contained in Appendix A, as revised through Amendment No. 318, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.
  - (3) Auxiliary River Water System  
(Deleted by Amendment No. 8)

- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations set forth in 10 CFR Chapter 1 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

Energy Harbor Nuclear Corp. is authorized to operate the facility at a steady state reactor core power level of 2900 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 209, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated in the license. Energy Harbor Nuclear Corp. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

## 1.1 Definitions

**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. Identified LEAKAGE

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 to not interfere with the operation of leakage detection systems; or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE);

b. Unidentified LEAKAGE

All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and

c. Pressure Boundary LEAKAGE

LEAKAGE (except primary to secondary LEAKAGE) through a fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.

### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE,
- b. 1 gpm unidentified LEAKAGE,
- c. 10 gpm identified LEAKAGE, and
- d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	B.1 Reduce LEAKAGE to within limits.	4 hours
C. Required Action and associated Completion Time not met.  <u>OR</u>  Primary to secondary LEAKAGE not within limit.	C.1 Be in MODE 3.  <u>AND</u>  C.2 Be in MODE 5.	6 hours    36 hours



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

ENERGY HARBOR NUCLEAR CORP.

AND

ENERGY HARBOR NUCLEAR GENERATION LLC

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

DOCKET NO. 50-346

Amendment No. 303  
Renewed License No. NPF-3

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by FirstEnergy Nuclear Operating Company dated October 19, 2021, 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. NPF-3 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 303, are hereby incorporated in the renewed license. Energy Harbor Nuclear Corp. shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Nancy L. Salgado, Chief  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications and Renewed Facility  
Operating License

Date of Issuance: September 16, 2022

ATTACHMENT TO LICENSE AMENDMENT NO. 303  
RENEWED FACILITY OPERATING LICENSE NO. NPF-3  
DOCKET NO. 50-346

Replace the following pages of the Renewed Facility Operating License and 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

L-5

INSERT

L-5

Technical Specifications

Replace the following pages of the Renewed Facility Operating License, Appendix A, Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

REMOVE

1.1-3  
3.4.13-1

INSERT

1.1-3  
3.4.13-1

- 2.C. This renewed 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

Energy Harbor Nuclear Corp. is authorized to operate the facility at steady state reactor core power levels not in excess of 2817 megawatts (thermal). Prior to attaining the power level, Toledo Edison Company shall comply with the conditions identified in Paragraph (3) (o) below and complete the preoperational tests, startup tests and other items identified in Attachment 2 to this license in the sequence specified. Attachment 2 is an integral part of this renewed license.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 303, are hereby incorporated in the renewed license. Energy Harbor Nuclear Corp. shall operate the facility in accordance with the Technical Specifications.

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the issuance of the renewed license or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the renewed license supported by a favorable evaluation by the Commission:

- (a) Energy Harbor Nuclear Corp. shall not operate the reactor in operational Modes 1 and 2 with less than three reactor coolant pumps in operation.
- (b) Deleted per Amendment 6
- (c) Deleted per Amendment 5

## 1.1 Definitions

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### LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE, such as that from pump seals or valve packing (except RCP seal return flow), 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 to not interfere with the operation of leakage detection systems; or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE);

b. Unidentified LEAKAGE

All LEAKAGE (except RCP seal return flow) that is not identified LEAKAGE; and

c. Pressure Boundary LEAKAGE

LEAKAGE (except primary to secondary LEAKAGE) through a fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.

### 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.

### NUCLEAR HEAT FLUX HOT CHANNEL FACTOR ( $F_Q$ )

$F_Q$  shall be the maximum local linear power density in the core divided by the core average fuel rod linear power density, assuming nominal fuel pellet and fuel rod dimensions.

### NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR ( $F_{\Delta H}^N$ )

$F_{\Delta H}^N$  shall be the ratio of the integral of linear power along the fuel rod on which minimum departure from nucleate boiling ratio occurs, to the average fuel rod power.

### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE; and
- d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	B.1 Reduce LEAKAGE to within limits.	4 hours
C. Required Action and associated Completion Time not met.  <u>OR</u>  Primary to secondary LEAKAGE not within limit.	C.1 Be in MODE 3.  <u>AND</u>  C.2 Be in MODE 5.	6 hours   36 hours



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

ENERGY HARBOR NUCLEAR CORP.  
ENERGY HARBOR NUCLEAR GENERATION, LLC  
DOCKET NO. 50-440  
PERRY NUCLEAR POWER PLANT, UNIT NO. 1  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 198  
License No. NPF-58

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by Energy Harbor Nuclear Corp., et al.,<sup>1</sup> dated October 19, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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.

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<sup>1</sup> Energy Harbor Nuclear Corp. is authorized to act as agent for Energy Harbor Nuclear Generation, LLC and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

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 Facility Operating License No. NPF-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. 198, are hereby incorporated into the license. Energy Harbor Nuclear Corp. 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 its issuance and shall be implemented within 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Nancy L. Salgado, Chief  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Facility Operating  
License No. NPF-58 and  
Technical Specifications

Date of Issuance: September 16, 2022

ATTACHMENT TO LICENSE AMENDMENT NO. 198

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

FACILITY OPERATING LICENSE NO. NPF-58

DOCKET NO. 50-440

Facility Operating License No. NPF-58

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

REMOVE

INSERT

-4-

-4-

Technical Specifications

Replace the following pages of the 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

INSERT

1.0-4

1.0-4

3.4-12

3.4-12

3.4-13

3.4-13

- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I 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

Energy Harbor Nuclear Corp. is authorized to operate the facility at reactor core power levels not in excess of 3758 megawatts thermal (100% power) 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. 198, are hereby incorporated into the license. Energy Harbor Nuclear Corp. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Antitrust Conditions

- a. Energy Harbor Nuclear Generation LLC shall comply with the antitrust conditions delineated in Appendix C to this license; Appendix C is hereby incorporated into this license.

1.1 Definitions (continued)

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LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE into the drywell such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or
2. LEAKAGE into the drywell atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems;

b. Unidentified LEAKAGE

All LEAKAGE into the drywell that is not identified LEAKAGE;

c. Total LEAKAGE

Sum of the identified and unidentified LEAKAGE; and

d. Pressure Boundary LEAKAGE

LEAKAGE through a fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.

LINEAR HEAT GENERATION  
RATE (LHGR)

The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.

LOGIC SYSTEM FUNCTIONAL  
TEST

A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip units, solid state logic elements, etc.) of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.

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(continued)

### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.5 RCS Operational LEAKAGE

LCO 3.4.5 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b.  $\leq 5$  gpm unidentified LEAKAGE;
- c.  $\leq 30$  gpm total LEAKAGE averaged over the previous 24 hour period; and
- d.  $\leq 2$  gpm increase in unidentified LEAKAGE within the previous 24 hour period in MODE 1.

APPLICABILITY: MODES 1, 2, and 3.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B. Unidentified LEAKAGE not within limit.  <u>OR</u>  Total LEAKAGE not within limit.	B.1 Reduce LEAKAGE to within limits.	4 hours
C. Unidentified LEAKAGE increase not within limit.	C.1 Verify source of unidentified LEAKAGE increase is not service sensitive austenitic material.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	D.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify RCS unidentified LEAKAGE, total LEAKAGE, and unidentified LEAKAGE increase are within limits.	In accordance with the Surveillance Frequency Control Program



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 318 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-66

AMENDMENT NO. 209 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-73

AMENDMENT NO. 303 TO RENEWED FACILITY OPERATING LICENSE NO. NPF 3

AMENDMENT NO. 198 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-58

ENERGY HARBOR NUCLEAR CORP.

ENERGY HARBOR NUCLEAR GENERATION LLC

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NOS. 50-334, 50-412, 50-346, AND 50-440

<u>Application (i.e., initial and supplements)</u> <ul style="list-style-type: none"><li>October 19, 2021, ADAMS Accession No. ML21292A274</li></ul>	<u>Safety Evaluation Date</u> <ul style="list-style-type: none"><li>September 16, 2022</li></ul> <u>Principal Contributors to Safety Evaluation</u> <ul style="list-style-type: none"><li>Ravi Grover</li></ul>
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## 1.0 INTRODUCTION

Energy Harbor Nuclear Corp. (EHNC, the licensee) requested changes to the technical specifications (TSs) for Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS), Davis Besse Nuclear Power Station, Unit No. 1 (DBNPS), and Perry Nuclear Power Plant, Unit No. 1 (PNPP), by license amendment request (application). In its application, the licensee requested that the U.S. Nuclear Regulatory Commission (NRC, the Commission) process the proposed amendments under the Consolidated Line Item Improvement Process (CLIIP). The proposed changes would revise the TSs related to reactor coolant system (RCS) operational leakage and the definition of the term "LEAKAGE" based on Technical Specifications Task Force (TSTF) Traveler TSTF-554, Revision 1, "Revise Reactor Coolant Leakage Requirements," (TSTF-554)

(Agencywide Documents Access and Management System (ADAMS) Accession No. ML20016A233), and the associated NRC staff safety evaluation (SE) of TSTF-554 (ML20322A024).

The licensee has proposed variations from the TS changes described in TSTF-554. The variations are described and evaluated in Section 3.2 of this SE.

### 1.1 Reactor Coolant System Description

Components that contain or transport the coolant to or from the reactor core make up the RCS. Materials can degrade as a result of the complex interaction of the materials, the stresses they encounter, and through operational wear or mechanical deterioration during normal and upset operating environments. Such material degradation could lead to leakage of reactor coolant into containment buildings.

RCS leakage falls under two main categories – identified leakage and unidentified leakage. Identifying the sources of leakage is necessary for prompt identification of potentially adverse conditions, assessment of safety significance of the leakage, and quick corrective action. A limited amount of leakage from the reactor coolant pressure boundary (RCPB) directly into the containment/drywell atmosphere is expected as the RCS and other connected systems cannot be made 100 percent leak tight. This leakage is detected, located, and isolated from the containment atmosphere so as to not interfere with measurement of unexpected RCS leakage detection.

Leakage from the RCPB inside the primary containment/drywell is detected by independently monitored parameters, such as sump level changes and containment/drywell gaseous and particulate radioactivity levels. Plant TSs identify at least two independent and diverse means and/or methods of detection. The primary means of quantifying significant leakage in the containment/drywell is the containment/drywell sump monitoring system. The containment atmosphere particulate and gaseous radioactivity monitors are sensitive to radioactivity in any RCS leakage, but do not provide a reasonably accurate means of quantifying leakage. The containment/drywell sump monitoring system monitors the liquid collected in the sump. This liquid consists of leakage from RCS, leakage from other systems inside primary containment (e.g., component cooling water), and condensation of steam released from the RCS or other high-temperature systems that is condensed by the containment/drywell coolers and directed to the sump. The containment sump instrumentation measures the rate of liquid accumulation in the sump, displays results in the main control room, and provides for an alarm for high rates of liquid accumulation. The rate of liquid accumulation may be determined by changes in measured level in the sump or by the time between periodic pump operation to drain the sump between known sump levels.

Gaseous and/or particulate primary containment atmospheric radioactivity monitors continuously monitor the containment atmosphere during reactor operation for indications of leakage. The RCS contains radioactivity that, when released to the primary containment, can be detected by the gaseous or particulate primary containment atmospheric radioactivity monitor. Radioactivity detection systems are included for monitoring particulate and/or gaseous activities because of their sensitivities and rapid responses to RCS leakage. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products have been released from fuel elements. To enhance detection capability, radioactivity alarm settings are typically set to provide the most sensitive response without causing an excessive number of spurious alarms.

The safety significance of RCS leakage varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring RCS leakage into the containment area is necessary. Separation of identified leakage from unidentified leakage provides quantitative information to the operators, allowing them to take corrective action should leakage occur that is detrimental to the safety of the unit and the public.

## 1.2 Proposed TS Changes to Adopt TSTF-554

In accordance with NRC staff-approved TSTF-554, the licensee proposed changes that would revise the TSs related to RCS operational leakage and the definition of the term "LEAKAGE". Specifically, the licensee proposed the following changes to adopt TSTF-554:

- For each facility, the TS 1.1 identified LEAKAGE definition a.2 would be revised to remove the exclusion of pressure boundary leakage from identified leakage by deleting "either" and the phrase "not to be pressure boundary LEAKAGE."
- Pressure boundary leakage is currently defined in the TSs as leakage (except primary to secondary leakage in a pressurized-water reactor) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall. For each facility, the TS 1.1 pressure boundary LEAKAGE definition would be revised to delete the word "nonisolable." The sentence, "LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE," would be relocated from the TS Bases and added to the definition. This change would revise paragraph c. of the LEAKAGE definition in TS 1.1 for BVPS and DBNPS and paragraph d. of the LEAKAGE definition in TS 1.1 for PNPP.
- Additionally, the LEAKAGE definition would be revised by other editorial and punctuation changes to reflect the deletion and listed definitions.
- The RCS operational LEAKAGE requirements in TS 3.4.5 for PNPP and TS 3.4.13 for BVPS and DBNPS, would be revised as follows:
  - The ACTIONS section would be revised to add a new Condition A to isolate the pressure boundary leakage within 4 hours.
  - Existing Conditions A, B, and C in TSs for PNPP and existing Conditions A and B in TSs for BVPS and DBNPS, and the associated required actions would be renumbered.
  - Existing Condition C in TSs for PNPP and existing Condition B in TSs for BVPS and DBNPS, would be revised to delete the condition "Pressure boundary LEAKAGE exists," because pressure boundary leakage would be addressed by the new Condition A. In addition, this Condition would be revised to be applicable when the required action and associated completion time of the other conditions are not met.
  - Existing Condition B in TSs for BVPS and DBNPS would be revised to be applicable should any Action of TS 3.4.13 not be met by deleting "of Condition A."
  - Existing Condition C in TS for PNPP would be revised to be applicable should any Action of TS 3.4.5 not be met by deleting "of Condition A or B."

### 1.3 Additional Proposed TS Changes

The application identified certain variations from TSTF-554. Section 3.2 of this SE provides a description of the variations and the Staff's evaluation.

## 2.0 REGULATORY EVALUATION AND GUIDANCE

The regulation at Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36(c)(2) requires that TSs include limiting conditions for operation (LCOs). Per 10 CFR 50.36(c)(2)(i), LCOs "are the lowest functional capability or performance levels of equipment required for safe operation of the facility." The regulation also requires that when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met. The regulation at 10 CFR 50.2 defines RCPB as "all those pressure-containing components of boiling and pressurized water-cooled nuclear power reactors, such as pressure vessels, piping, pumps, and valves ..."

Regulatory Guide (RG) 1.45, Revision 1, "Guidance on Monitoring and Responding to Reactor Coolant System Leakage," dated May 2008 (ML073200271), Section B, Discussion "Leakage Separation," provides information related to separation between identified and unidentified leakage.

The NRC staff's guidance for the review of TSs 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 (ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared standard technical specifications (STSS) for each of the LWR nuclear designs. Accordingly, the NRC staff's review includes consideration of whether the proposed changes are consistent with NUREG 1430,<sup>1</sup> NUREG-1431,<sup>2</sup> and NUREG-1434,<sup>3</sup> as modified by NRC-approved travelers. Traveler TSTF-554 revised the STSS related to RCS operational leakage and the definition of the term "LEAKAGE." The NRC approved TSTF-554, under the CLIP on December 18, 2020 (ML20324A083).

## 3.0 TECHNICAL EVALUATION

### 3.1 Proposed TS Changes to Adopt TSTF-554

The NRC staff compared the licensee's proposed TS changes described in Section 1.2 of this SE against the changes approved in TSTF-554. In accordance with the SRP Chapter 16.0, the NRC staff determined that the STS changes approved in TSTF-554 are applicable to the facilities because these facilities are Babcock and Wilcox, Westinghouse, and General Electric designs and the NRC staff approved the TSTF-554 changes for such designs. The NRC finds

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<sup>1</sup> U.S. Nuclear Regulatory Commission, "Standard Technical Specifications, Babcock and Wilcox Plants," NUREG 1430, Volume 1, "Specifications," and Volume 2, "Bases," Revision 4.0, dated April 2012 (ADAMS Accession Nos. ML12100A177 and ML12100A178, respectively).

<sup>2</sup> U. S. Nuclear Regulatory Commission, "Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Volume 1, "Specifications," and Volume 2, "Bases," Revision 4, dated April 2012 (ADAMS Accession No. ML12100A222 and ML12100A228, respectively).

<sup>3</sup> U.S. Nuclear Regulatory Commission, "Standard Technical Specifications, General Electric BWR/6 Plants" NUREG 1434, Volume 1, "Specifications," and Volume 2, "Bases," Revision 4.0, dated April 2012 (ADAMS Accession Nos. ML12104A195 and ML12104A196, respectively).

that the licensee's proposed changes to the TSs described in Section 1.1 of this SE conform to those found acceptable in TSTF-554.

In the SE of TSTF-554, the NRC staff concluded that TSTF-554 changes to the STS 1.1 definition of "LEAKAGE" and to the STS for RCS operational leakage (the LCO addressing conditions and required actions when RCS pressure boundary leakage exists), are acceptable. The NRC staff found that removing the term "nonisolable" provides a clearer definition of pressure boundary leakage and that the source of the leakage is not relevant to the capability to collect and measure identified leakage, provided that separate, appropriate limits on pressure boundary leakage have been established. Therefore, the proposed change to the definition of identified leakage was acceptable as it did not conflict with 10 CFR 50.2 and was consistent with RG 1.45. The NRC staff further found that proposed new Condition A on boundary pressure leakage, including its associated Required Action A.1 and Completion Time, acceptable because the LCO revisions continue to specify the lowest functionable capability of equipment, identify remedial actions and require shutdown of the reactor if the remedial actions cannot be met.

The NRC staff finds that proposed changes to the TS 1.1 definition for each facility clarify what constitutes pressure boundary leakage and the source of leakage does not matter if the TSs have separate limits on pressure boundary leakage. The NRC staff also finds that TS 3.4.5 for PNPP and TS 3.4.13 for BVPS and DBNPS correctly specify the lowest functional capability or performance levels of equipment required for safe operation of the facility. Also, the NRC staff finds that proposed changes to the Actions of LCO 3.4.5 for PNPP and LCO 3.4.13 for BVPS and DBNPS are adequate remedial actions to be taken until each LCO can be met. Thus, the proposed changes continue to meet the requirements of 10 CFR 50.36(c)(2)(i) as discussed in Section 3.0 of the NRC staff's SE of TSTF-554.

### 3.2 Additional Proposed TS Changes

#### 3.2.1 Editorial Variations

The licensee noted that the TSs for each facility have different numbering and nomenclature than the STSs, as follows.

- For BVPS:
  - Items a.1 and a.2 under Definition "Identified LEAKAGE" end with a comma rather than a semicolon as shown in TSTF-554. The licensee is replacing the comma at the end of items a.1 and a.2 with a semicolon for editorial consistency.
  - Item a.3 under Definition "Identified LEAKAGE" already ends with a semicolon so the markups in this LAR editorially differ from TSTF-554, which shows the punctuation changing from a period to a semicolon.
- For DBNPS:
  - Item a.3 under Definition "Identified LEAKAGE" end with a comma rather than a period as shown in TSTF-554. The licensee is replacing the period at the end of item a.3 with a semicolon for editorial consistency.

- Item b, "Unidentified LEAKAGE," under Definition "LEAKAGE" already ends with a semicolon so the markups in this LAR editorially differ from TSTF-554 which shows the punctuation changing from a comma to a semicolon.
- For PNPP:
  - Item b, "Unidentified LEAKAGE," under Definition "LEAKAGE" already ends with a semicolon so the markups in this LAR editorially differ from TSTF-554 which shows the punctuation changing from a comma to a semicolon.

The NRC staff finds the above variations acceptable since the differences are editorial and do not affect the applicability of TSTF-554 to the proposed LAR.

### 3.2.2 Other Variation

In addition to the changes proposed consistent with the traveler discussed in Section 1.2, the licensee proposed the following variations.

- For DBNPS:
  - Items a.1 and b under Definition "Identified LEAKAGE" use the parenthetical phrase "(except RCP seal return flow)" instead of "(except RCP seal water injection or leakoff)" on which TSTF-554 was based. The licensee stated:

Seal water flow from the reactor coolant pump (RCP) seals (that is, RCP seal return flow) is the normal controlled RCP seal leakoff that is returned to the makeup tank. This difference in wording avoids an implication that the exception includes RCP upper seal leakoff, which is not returned to the makeup tank and is actual identified LEAKAGE.
- For PNPP:
  - The PNPP TS contain requirements that differ from the STS on which TSTF-554 was based. The licensee stated:

TS 3.4.5, RCS Operational LEAKAGE, Condition B, has only one action, Required Action B.1. Therefore, for the adoption of TSTF-554, Required Action B.1 is renumbered to C.1. In addition, the wording of the current Required Action B.1 differs from the Standard Technical Specifications. Required Action B.1 states "Verify source of unidentified LEAKAGE increase is not service sensitive austenitic material." For PNPP, wrought stainless steel primary pressure boundary piping was fabricated using Type 304 material and, wherever practical, the piping was solution heat treated after welding. Welded areas that could not be solution heat treated were protected by applying high ferrite (5 percent minimum ferrite) Type 308L weld overlay prior to the welding operation. These methods provide protection against stress corrosion cracking. As clarified in the current TS Bases Section 3.4.5, Required Action B.1 is to perform an evaluation to determine that the service sensitive Inconel 182 material in the nozzle welds of the reactor vessel, which is classified as "non-

resistant material” to intergranular stress corrosion cracking (IGSCC), is not the source of the increased leakage.

The NRC staff finds that these differences do not affect the applicability of TSTF-554 to the DBNPS and PNPP TSs. Specifically, the DBNPS definition of leakage includes RCP upper seal leakoff, which the TSTF-554 definition might incorrectly be read to exclude. For PNPP, TS 3.4.5, Required Action B.1 requires verification that service sensitive Inconel 182 material in reactor vessel nozzle welds is not the source of increased leakage, and for PNPP, this is equivalent to the TSTF-554 required action to verify that service sensitive austenitic material is not the source of increased leakage. The NRC staff, therefore, finds these variations acceptable.

### 3.3 TS Change Consistency

The NRC staff reviewed the proposed TS changes for technical clarity and consistency with the existing requirements for customary terminology and formatting. The NRC staff finds that the proposed changes are consistent with Chapter 16.0 of the SRP and are therefore acceptable.

### 4.0 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.

NOTICES AND ENVIRONMENTAL FINDINGS

RELATED TO

AMENDMENT NO. 318 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-66

AMENDMENT NO. 209 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-73

AMENDMENT NO. 303 TO RENEWED FACILITY OPERATING LICENSE NO. NPF 3

AMENDMENT NO. 198 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-58

ENERGY HARBOR NUCLEAR CORP.

ENERGY HARBOR NUCLEAR GENERATION LLC

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NOS. 50-334, 50-412, 50-346, AND 50-440

Application (i.e., initial and supplements)

- October 19, 2021,  
ADAMS Accession No. ML21292A274

Safety Evaluation Date

September 16, 2022

1.0 INTRODUCTION

Energy Harbor Nuclear Corp. (EHNC or the licensee) requested changes to the technical specifications (TSs) for Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS), and the Davis Besse Nuclear Power Station, Unit No. 1 (DBNPS), and Perry Nuclear Power Plant, Unit No. 1 (PNPP), by license amendment request (application). In its application, the licensee requested that the U.S. Nuclear Regulatory Commission (NRC, the Commission) process the proposed amendment under the Consolidated Line Item Improvement Process (CLIIP). The proposed changes would revise the TSs related to RCS operational leakage and the definition of the term "LEAKAGE" based on Technical Specifications Task Force (TSTF) Traveler TSTF-554, Revision 1, "Revise Reactor Coolant Leakage Requirements," (TSTF-554) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20016A233), and the associated NRC staff safety evaluation (SE) of TSTF-554 (ML20322A024).

## 2.0 STATE CONSULTATION

In accordance with the Commission's regulations, the officials of the State of Ohio and Commonwealth of Pennsylvania were notified of the proposed issuance of the amendments on July 29, 2022. The State officials had no comments.

## 3.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and 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 as published in the *Federal Register* on December 28, 2021 (86 FR 73818), and there has been no public comment on such finding. 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.

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2, DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1, AND PERRY NUCLEAR POWER PLANT, UNIT NO. 1 – ISSUANCE OF AMENDMENTS REGARDING ADOPTION OF TSTF-554, “REVISE REACTOR COOLANT LEAKAGE REQUIREMENTS” (EPID L-2021-LLA-0019) DATED SEPTEMBER 16, 2022

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