

February 24, 2022

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Limerick Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Subject: License Amendment Request
Proposed Change to Correct Nonconservative Technical Specification Table
3.3.2-1 for Main Steam Line Isolation Trip Function 1.g

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Constellation Energy Generation, LLC (CEG), proposes a change to the Technical Specifications (TS), Appendix A of Renewed Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively.

This license amendment request proposes a change to TS Table 3.3.2-1, Isolation Actuation Instrumentation, Trip Function 1.g for Main Steam Line Isolation. In particular, the proposed change will increase the minimum operable channels per trip system for the "Turbine Enclosure – Main Steam Line Tunnel Temperature – High" trip function from 14 channels per trip system to 16 channels per trip system. This change corrects an administrative error that was introduced into the TS by a previous amendment for LGS Unit 1 which was subsequently incorporated into the initial TS for LGS Unit 2. This error was recently identified and determined to result in a nonconservative TS. Therefore, in accordance with NEI 15-03, "Licensee Actions to Address Nonconservative Technical Specifications," as endorsed by Regulatory Guide 1.239, "Licensee Actions to Address Nonconservative Technical Specifications," this amendment request proposes to correct the administrative error and resolve the nonconservative TS. In the interim, actions have been put in place in accordance with NEI 15-03 to address this issue. The proposed change is consistent with the current design basis of the plant. No physical changes to the plant are required.

CEG has concluded that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92, "Issuance of amendment."

The proposed change has been reviewed by the LGS Plant Operations Review Committee in accordance with the requirements of the CEG Quality Assurance Program.

This amendment request contains no regulatory commitments.

Attachment 1 provides the evaluation of the proposed change. Attachment 2 provides a copy of the marked-up TS pages that reflect the proposed change.

ATTACHMENT 1

License Amendment Request

Limerick Generating Station, Units 1 and 2

Docket Nos. 50-352 and 50-353

EVALUATION OF PROPOSED CHANGE

Subject: Proposed Change to Correct Nonconservative Technical Specification Table 3.3.2-1 for Main Steam Line Isolation Trip Function 1.g

1.0 SUMMARY DESCRIPTION

2.0 DETAILED DESCRIPTION

2.1 System Design and Operation

2.2 Current Technical Specification Requirements

2.3 Reason for the Proposed Change

2.4 Description of the Proposed Change

3.0 TECHNICAL EVALUATION

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

4.2 Precedents

4.3 No Significant Hazards Consideration

4.4 Conclusions

5.0 ENVIRONMENTAL CONSIDERATION

6.0 REFERENCES

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Constellation Energy Generation, LLC (CEG), proposes a change to the Technical Specifications (TS), Appendix A of Renewed Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively.

This license amendment request proposes a change to TS Table 3.3.2-1, Isolation Actuation Instrumentation, Trip Function 1.g for Main Steam Line Isolation. In particular, the proposed change will increase the minimum operable channels per trip system for the "Turbine Enclosure – Main Steam Line Tunnel Temperature – High" trip function from 14 channels per trip system to 16 channels per trip system. This change corrects an administrative error that was introduced into the TS by a previous amendment for LGS Unit 1 which was subsequently incorporated into the initial TS for LGS Unit 2. This error was recently identified and determined to result in a nonconservative TS. Therefore, in accordance with NEI 15-03, "Licensee Actions to Address Nonconservative Technical Specifications," as endorsed by Regulatory Guide 1.239, "Licensee Actions to Address Nonconservative Technical Specifications," this amendment request proposes to correct the administrative error and resolve the nonconservative TS. In the interim, actions have been put in place in accordance with NEI 15-03 to address this issue. The proposed change is consistent with the current design basis of the plant. No physical changes to the plant are required.

2.0 DETAILED DESCRIPTION

2.1 System Design and Operation

The following Sections of the UFSAR describe the Main Steam Line (MSL) Leak Detection System (LDS).

7.6.1.3.3.2 Main Steam Line Leak Detection System - Instrumentation and Controls

7.6.1.3.3.2.2 Main Steam Line Temperature in Outboard MSIV Room and Turbine Enclosure Main Steam Tunnel Monitoring Subsystem - Instrumentation and Controls

7.6.1.3.3.2.2.1 Identification

High ambient temperature in the areas in which the main steam lines are located outside of the primary containment could indicate a leak in a main steam line. Each main steam line isolation logic channel is tripped by high ambient temperature in the outboard MSIV [Main Steam Isolation Valve] room or main steam tunnel. The automatic closure of various valves prevents the excessive loss of reactor coolant and the release of a significant amount of radioactive material from the RCPB [Reactor Coolant Pressure Boundary].

High temperature in the vicinity of the main steam lines is detected by dual element thermocouples located above the main steam lines between the primary containment wall and the turbine. The detectors are located or shielded so that they are sensitive to air temperature and not the radiated heat from hot equipment.

The temperature sensors provide an input to temperature indicating switches.

The temperature detection system is designed to detect steam leaks equivalent to 5 gpm. A total of 4 main steam line high ambient temperature channels are provided in the outboard MSIV room and 32 are provided on the main steam line in the turbine enclosure. Each main steam line isolation logic channel is tripped by high ambient temperature in the outboard MSIV room, or in the turbine enclosure.

7.6.1.3.3.2.2.3 Initiating Circuits

Four ambient temperature sensing circuits monitor the outboard MSIV room, and thirty-two monitor the turbine enclosure. The temperature elements are connected to four separate instrumentation channels. The 36 ambient temperature elements are physically located near the main steam lines in the outboard MSIV room and the turbine enclosure. The locations of the temperature elements provide the earliest practicable detection of a main steam line leak.

7.6.1.3.3.2.2.4 Logic and Sequencing

When a predetermined increase in ambient temperature is detected, trip signals are transmitted to the PCRVICS [Primary Containment and Reactor Vessel Isolation Control System]. The PCRVICS initiates closure of all main steam line isolation and drain valves.

Four instrumentation channels are provided to ensure protective action when needed and to prevent inadvertent isolation resulting from instrumentation malfunctions.

The output trip signal of each logic channel initiates a trip logic division trip. The output trip signals of the trip logic divisions are combined in one-out-of-two-twice for the MSIVs or two-out-of-two logics for the main steam line drains. Logic channels 'A or C' and 'B or D' are required to initiate main steam line isolation. Logic channels 'A and B' or 'C and D' are required to initiate main steam line drain isolation. Thus, failure of any one division does not result in inadvertent action.

2.2 Current Technical Specification Requirements

The current TS Table 3.3.2-1, "Isolation Actuation Instrumentation," for Trip Function 1., "Main Steam Line Isolation," Item g., "Turbine Enclosure – Main Steam Line Tunnel Temperature – High," indicates that the minimum operable channels per trip system is 14.

2.3 Reason for the Proposed Change

As noted in Section 2.2 above, TS Table 3.3.2-1, Trip Function 1.g. specifies that 14 channels of Turbine Enclosure – Main Steam Line Tunnel Temperature – High are required per trip system for main steam line isolation, and TS 3.3.2 provides remedial actions if less than 14 channels are operable. However, the system design basis as described in UFSAR Section 7.6.1.3.3.2.2 above requires 16 channels per trip system for this function based on the isolation logic arrangement.

Review of design and licensing basis documentation revealed that the current TS Table 3.3.2-1 Trip Function 1.g., with only 14 channels, does not assure that all committed requirements of this automatic isolation function are maintained. Specifically, the Nuclear Steam Supply Shutoff System (NSSSS) Group 1 safety-related four division isolation logic is arranged in a one-out-of-two taken twice trip logic ('A or C' and 'B or D') for Main Steam Isolation Valves (MSIVs) and two-out-of-two trip logic ('A and B' or 'C and D') for main steam line drain valves. The NSSSS Group 1 logic design requires all active channels to be in service to perform its design function while being single failure proof to satisfy the committed design and licensing basis (GDC 21 & IEEE-279). Since TS Table 3.3.2-1 Trip Function 1.g. only requires 14 of the 16 channels per trip system to be operable, two channels per trip system could be unavailable for an indefinite amount of time, and therefore, the MSL LDS isolation logic may not have been able to meet its design basis under specific circumstances. This issue constitutes a nonconservative TS by not specifying the correct minimum number of required channels for operability in TS Table 3.3.2-1 Trip Function 1.g.

In accordance with NEI 15-03, this issue was entered into the Corrective Action Program (CAP). All 16 TS Table 3.3.2-1 Trip Function 1.g. channels are routinely tested and surveilled and are currently in compliance with the associated TS Surveillance Requirements. Therefore, all 16 TS Table 3.3.2-1 Trip Function 1.g. channels per trip system are TS operable for both units. As an administrative control, TS 3.3.2 Limiting Condition for Operation (LCO) associated with TS Table 3.3.2-1 Trip Function 1.g. is entered when less than 16 channels per trip system are operable.

2.4 Description of the Proposed Change

TS Table 3.3.2-1, "Isolation Actuation Instrumentation," Trip Function 1., "Main Steam Line Isolation," Item g., "Turbine Enclosure – Main Steam Line Tunnel Temperature – High," Minimum Operable Channels Per Trip System is proposed to be increased from "14" to "16" to be consistent with the design basis of the plant.

The marked-up TS pages that reflect the proposed change for each unit are provided in Attachment 2.

3.0 TECHNICAL EVALUATION

By letter dated April 10, 1989 (Reference 1), Philadelphia Electric Company submitted Technical Specifications Change Request (TSCR) 88-14 for Limerick Generating Station, Unit 1. The TSCR requested changes to the TS to correct technical inconsistencies. In addition, the TSCR requested that the proposed changes be effective prior to the issuance of the Unit 2 Operating License to ensure that the inconsistencies do not become part of the Unit 2 Operating License. By letter dated June 20, 1989 (Reference 2), the NRC issued Amendment No. 28 for LGS Unit 1 approving the proposed changes which were subsequently incorporated into the LGS Unit 2 TS.

The TS changes were proposed to (1) clarify the nomenclature used in describing instrument (temperature sensor) locations, and (2) properly designate the actual locations and setpoints of the leak detection instruments identified in the TS. The proposed changes were to make the TS

consistent with the original design basis of the plant. No physical changes were made to the plant as part of the amendment request.

TS Table 3.3.2-1 (and others) were revised to indicate two specific locations monitored by the Main Steam Isolation Valve - Leakage Detection System (MSIV-LDS) [referred to in the UFSAR as the MSL LDS]. The change revised Trip Function 1.f to denote the "Outboard MSIV Room Temperature High" while the second location specified by Trip Function 1.g continued to denote the "Turbine Enclosure - Main Steam Line Tunnel – High." Recognizing that the setpoints for the temperature sensors depend upon the area in which the sensors are located, Trip Function 1.f reflected the four (4) General Electric (GE) temperature sensors located in the Outboard MSIV Room with a specified setpoint of 192°F with the minimum operable channels per trip system revised to two (2). This corresponded to the total number of sensors located in this area. The remaining twelve (12) GE temperature sensors located in the main steam line tunnel in the Turbine Enclosure [which were in addition to the twenty (20) Bechtel temperature sensors in the Turbine Enclosure] were reflected in Trip Function 1.g with a specified setpoint of 165°F. The minimum number of operable channels per trip system for Trip Function 1.g was revised to fourteen (14).

However, as noted in the design basis information described in UFSAR Section 7.6.1.3.3.2.2 above, there are a total of 36 temperature sensors monitoring main steam line temperature; four (4) main steam line high ambient temperature channels (two per trip system) in the outboard MSIV room (Trip Function 1.f) and 32 temperature channels (16 per trip system) in the main steam line tunnel in the Turbine Enclosure (Trip Function 1.g). Therefore, an administrative error for Trip Function 1.g for the Turbine Enclosure was introduced in the development of TSCR 88-14 in that the number of minimum operable channels per trip system should have been "16" rather than "14." The proposed change in this amendment request is an administrative change to correct the error in TS Table 3.3.2-1, Trip Function 1.g and make it consistent with the design basis of the plant.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 50.36, "Technical Specifications," identifies the requirements for the Technical Specification categories for operating power plants: (1) Safety limits, limiting safety system settings, and limiting control settings, (2) *Limiting conditions for operation*, (3) Surveillance requirements, (4) Design features, (5) Administrative controls, (6) Decommissioning and (7) Initial notification, and (8) Written Reports. For Limiting conditions for operation, 10 CFR 50.36 states: Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met. LGS UFSAR Section 7.6.1.3.3.2.2 describes the design of the Main Steam Line Leak Detection System and its design bases. The proposed change to TS Table 3.3.2-1 does not affect the UFSAR description of the LGS Main Steam Line Leak Detection System, its design bases, or performance.

10 CFR 50 Appendix A, GDC 21, "Protection system reliability and testability." The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred. Since no physical changes are being made, and current design bases are not being affected, there is no impact on compliance with GDC 21.

IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations." The IEEE 279 criteria establish minimum requirements for the safety-related functional performance and reliability of protection systems for stationary land-based nuclear reactors producing steam for electric power generation. For purposes of these criteria, the nuclear power generating station protection system encompasses all electric and mechanical devices and circuitry (from sensors to actuation device input terminals) involved in generating those signals associated with the protective function. These signals include those that actuate reactor trip and that, in the event of a serious reactor accident, actuate engineered safeguards such as containment isolation, core spray, safety injection, pressure reduction, and air cleaning. IEEE 279, Section 3, "Design Basis," requires that design basis documentation include (2) the generating station variables (for example, neutron flux, coolant flow, pressure, etc.) that are required to be monitored in order to provide protective actions; and (3) the minimum number and location of the sensors required to monitor adequately, for protective function purposes, those variables listed in Section 3(2) that have a spatial dependence. As noted above, LGS UFSAR Section 7.6.1.3.3.2.2 describes the design of the Main Steam Line Leak Detection System and its design bases. The proposed change to TS Table 3.3.2-1 does not affect the UFSAR description of the LGS Main Steam Line Leak Detection System, its design bases, performance, or compliance with IEEE 279-1971.

4.2 Precedents

None

4.3 No Significant Hazards Consideration

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Constellation Energy Generation, LLC (CEG), proposes a change to the Technical Specifications (TS), Appendix A of Renewed Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively.

This license amendment request proposes a change to TS Table 3.3.2-1, Isolation Actuation Instrumentation, Trip Function 1.g for Main Steam Line Isolation. In particular, the proposed change will increase the minimum operable channels per trip system for the "Turbine Enclosure – Main Steam Line Tunnel Temperature – High" trip function from 14 channels per trip system to 16 channels per trip system. This change corrects an administrative error that was introduced into the TS by a previous amendment for LGS Unit 1 which was subsequently incorporated into the initial TS for LGS Unit 2. This error was recently identified and determined to result in a nonconservative TS. Therefore, this amendment request proposes to correct the administrative error and resolve the nonconservative TS. The proposed change is consistent with the current design basis of the plant. No physical changes to the plant are required.

CEG has evaluated the proposed changes, using the criteria in 10 CFR 50.92, "Issuance of amendment," and has determined that the proposed changes do not involve a significant hazards consideration. The following information is provided to support a finding of no significant hazards consideration.

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

Response: No

The proposed change is an administrative change that corrects an error in the Technical Specifications consistent with the design basis of the plant. The temperature sensors are provided to detect a leak in the main steam line and are not credited in the safety analysis. There is no actual change in the number or physical location of the sensors. The proposed change does not impact the physical configuration or function of plant structures, systems, or components (SSCs) or the manner in which SSCs are operated, maintained, modified, tested, or inspected. The proposed change does not impact the initiators or assumptions of analyzed events, nor does it impact mitigation of accidents or transient events.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No

The proposed change is an administrative change that corrects an error in the Technical Specifications consistent with the design basis of the plant. There is no change in the number or physical location of the sensors themselves. The proposed change does not alter plant configuration, require that new plant equipment be installed, alter assumptions made about accidents previously evaluated, or impact the function of plant SSCs or the manner in which SSCs are

operated, maintained, modified, tested, or inspected. There are no new initiating parameters that would create the possibility for a new or different type of accident.

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

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

Response: No

The proposed change is an administrative change that corrects an error in the Technical Specifications consistent with the design basis of the plant. The proposed change does not involve any physical changes to plant SSCs or the manner in which SSCs are operated, maintained, modified, tested, or inspected. The proposed change does not involve a change to any safety limits, limiting safety system settings, limiting conditions for operation, setpoints or design parameters for any SSC. The proposed change does not impact any safety analysis assumptions and does not involve a change in initial conditions, system response times, or other parameters affecting an accident analysis.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above evaluation, CEG concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92, paragraph (c), and accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

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

5.0 ENVIRONMENTAL CONSIDERATION

CEG has determined that the proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR

51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

6.0 REFERENCES

1. Letter from G. A. Hunger, Philadelphia Electric Company, to U.S. Nuclear Regulatory Commission, "Limerick Generating Station, Unit 1, Technical Specifications Change Request [No. 88-14]," dated April 10, 1989 (ADAMS Accession No. ML20244B278).
2. Letter from R. J. Clark, U.S. Nuclear Regulatory Commission, to G. A. Hunger, Philadelphia Electric Company, "Change Request 88-14, TS Cleanup (TAC No. 72912)," dated June 20, 1989 (ADAMS Accession No. ML011520366).

ATTACHMENT 2

License Amendment Request

**Limerick Generating Station, Units 1 and 2
Docket Nos. 50-352 and 50-353**

**Proposed Change to Correct Nonconservative Technical Specification
Table 3.3.2-1 for Main Steam Line Isolation Trip Function 1.g**

Markup of Proposed Technical Specifications Pages

Unit 1 TS Page

3/4 3-11

Unit 2 TS Page

3/4 3-11

TABLE 3.3.2-1

ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>ISOLATION SIGNAL (a)</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (b)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
<u>1. MAIN STEAM LINE ISOLATION</u>				
a. Reactor Vessel Water Level				
1) Low, Low-Level 2	B	2	1, 2, 3	21
2) Low, Low, Low-Level 1	C	2	1, 2, 3	21
b. DELETED	DELETED	DELETED	DELETED	DELETED
c. Main Steam Line Pressure - Low	P	2	1	22
d. Main Steam Line Flow - High	E	2/line	1, 2, 3	20
e. Condenser Vacuum - Low	Q	2	1, 2**, 3**	21
f. Outboard MSIV Room Temperature - High	F(f)	2	1, 2, 3	21
g. Turbine Enclosure - Main Steam Line Tunnel Temperature - High	F(f)	14	1, 2, 3	21
h. Manual Initiation	NA	2	1, 2, 3	24
<u>2. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION</u>				
a. Reactor Vessel Water Level Low - Level 3	A	2	1, 2, 3	23
b. Reactor Vessel (RHR Cut-In Permissive) Pressure - High	V	2	1, 2, 3	23
c. Manual Initiation	NA	1	1, 2, 3	24

16

TABLE 3.3.2-1

ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>ISOLATION SIGNAL (a)</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (b)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
1. <u>MAIN STEAM LINE ISOLATION</u>				
a. Reactor Vessel Water Level				
1) Low, Low-Level 2	B	2	1, 2, 3	21
2) Low, Low, Low-Level 1	C	2	1, 2, 3	21
b. DELETED	DELETED	DELETED	DELETED	DELETED
c. Main Steam Line Pressure - Low	P	2	1	22
d. Main Steam Line Flow - High	E	2/line	1, 2, 3	20
e. Condenser Vacuum - Low	Q	2	1, 2**, 3**	21
f. Outboard MSIV Room Temperature - High	F(f)	2	1, 2, 3	21
g. Turbine Enclosure - Main Steam Line Tunnel Temperature - High	F(f)	14	1, 2, 3	21
h. Manual Initiation	NA	2	1, 2, 3	24
2. <u>RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION</u>				
a. Reactor Vessel Water Level Low - Level 3	A	2	1, 2, 3	23
b. Reactor Vessel (RHR Cut-In Permissive) Pressure - High	V	2	1, 2, 3	23
c. Manual Initiation	NA	1	1, 2, 3	24

16