Constellation

4300 Winfield Road
Warrenville, IL 60555
630 657 2000 Office

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10 CFR 50.90

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

Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

Subject: License Amendment Request to Revise Technical Specification 3.1.4, "Control Rod Scram Times"

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Constellation Energy Generation, LLC (CEG) requests an amendment to Renewed Facility Operating License Nos. DPR-19 and DPR-25 for Dresden Nuclear Power Station (DNPS), Units 2 and 3, respectively. Specifically, the proposed change would revise control rod scram time limits in DNPS Technical Specifications (TS) Table 3.1.4-1 to regain margin for reactor vessel overpressure.

Attachment 1 provides a description and assessment of the proposed changes. Attachment 2 provides the existing TS page marked-up to show the proposed TS changes. There are no TS Bases changes associated with the corresponding TS change.

The proposed changes have been reviewed and approved by the Plant Operations Review Committee at DNPS in accordance with the requirements of the CEG Quality Assurance Program.

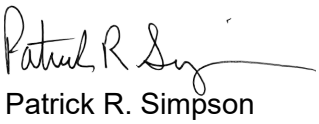
CEG requests approval of the proposed changes by August 25, 2023. Once approved, the amendment shall be implemented within 60 days.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), CEG is notifying the State of Illinois of this application for license amendment by transmitting a copy of this letter and its attachments to the designated State Officials.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mrs. Linda M. Palutsis at (630) 657-2821.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 25th day of August 2022.

Respectfully,



Patrick R. Simpson
Sr. Manager Licensing
Constellation Energy Generation, LLC

Attachments:
1. Evaluation of Proposed Changes
2. Markup of Proposed Technical Specifications Pages

cc: U.S. NRC Region III, Regional Administrator
U.S. NRC Senior Resident Inspector, Dresden Nuclear Power Station
Illinois Emergency Management Agency – Division of Nuclear Safety

ATTACHMENT 1
Evaluation of Proposed Changes

Subject: License Amendment Request to Revise Technical Specification 3.1.4, "Control Rod Scram Times"

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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) requests an amendment to Renewed Facility Operating License Nos. DPR-19 and DPR-25 for Dresden Nuclear Power Station (DNPS), Units 2 and 3, respectively. Specifically, the proposed change would revise control rod scram time limits in DNPS Technical Specifications (TS) Table 3.1.4-1 to regain margin for reactor vessel overpressure.

2.0 DETAILED DESCRIPTION

The proposed change would revise control rod scram time limits in DNPS TS Table 3.1.4-1, as indicated below, to regain margin for reactor vessel overpressure. The revision of the numerical values of the scram insertion speeds also results in a change to an input parameter to the NRC approved ODYN based transient methodology (References 6.3, 6.4, and 6.5) for determining the Operating Limit Minimum Critical Power Ratio (OLMCPR). ODYN is a calculational model included in the General Electric Standard Application for Reactor Fuel (GESTAR-II, Reference 6.6). Since GESTAR-II is already part of the DNPS licensing basis, this methodology change does not require a corresponding TS change.

PERCENT INSERTION	CURRENT SCRAM TIMES (seconds)	REVISED SCRAM TIMES (seconds)
5	0.48	0.45
20	0.89	0.85
50	1.98	1.80
90	3.44	3.00

Attachment 2 contains a marked-up version of the DNPS, Units 2 and 3 TS showing the proposed changes to Table 3.1.4-1. There are no corresponding changes to the TS Bases.

3.0 TECHNICAL EVALUATION

DNPS plans to load GNF3 fuel into Unit 2 during the fall 2023 refueling outage and into Unit 3 the following fall. The fuel transition requires a new set of scram times to support improvements on the margin to the American Society of Mechanical Engineers (ASME) Code reactor vessel overpressure limit.

The scram function of the Control Rod Drive (CRD) System controls reactivity changes during anticipated operational occurrences (AOOs) to ensure that specified acceptable fuel design limits are not exceeded. The Design Basis Accident (DBA) and transient analyses assume that all control rods scram at a specified insertion rate. The resulting negative scram reactivity forms the basis for the determination of plant thermal limits (e.g., the minimum critical power ratio (MCPR)). Other distributions of scram times (e.g., several control rods scramming slower than the average time with several control rods scramming faster than the average time) can also provide sufficient scram reactivity. Surveillance of each individual control rod's scram time

ensures the scram reactivity assumed in the DBA and transient analyses can be met.

At ≥ 800 psig, the scram function is designed to insert negative reactivity at a rate fast enough to prevent the actual MCPR from becoming less than the MCPR Safety Limit, during the analyzed limiting power transient. Below 800 psig, the scram function is assumed during the control rod drop accident to provide protection against violating fuel design limits during reactivity insertion accidents. For the reactor vessel overpressure protection analysis, the scram function, along with the safety/relief valves, ensure that the peak vessel pressure is maintained within the applicable ASME Code limits.

Based on the evaluations performed in an analysis carried out by Global Nuclear Fuels - America, LLC (GNF), modifications to the scram speed profiles can be used to regain overpressure margin. The proposed changes do not affect the design, functional performance, or normal operation of the facility. Similarly, it does not affect the design or operation of any component in the facility such that new equipment failure modes are created.

The determination of the revised Dresden TS scram speed limits utilizes the General Electric (GE) transient calculation methodology involving the ODYN computer code (Reference 6.3). This methodology was previously approved by the NRC in References 6.4 and 6.5. The methodology described in Reference 6.3 applies two scram time options in the calculation of the MCPR operating limits. The Option A analysis directly applies the TS scram time values, and an NRC-imposed uncertainty factor and Option B applies a generic statistical scram time distribution. Licensees are required to demonstrate that the actual scram speeds bound the generic statistical scram times in Option B or operate with a higher limit (i.e., a penalty). The proposed revision of the TS scram time values described in Section 2 is based on the Option A method using a 1.044 code uncertainty penalty. The uncertainty consideration in the calculation of the OLMCPR ensures that less than 0.1% of the fuel rods will experience boiling transition during the transient (Reference 6.6).

Existing TS Surveillance Requirements (SRs) for each individual control rod's scram time ensures the scram reactivity assumed in the DBA and transient analyses can be met. These SRs are sufficient to ensure that the plant operates under the ODYN Option A or B operating limits for pressurization events.

All cores containing GNF3 fuel will be analyzed with the revised TS scram times resulting in the development of the fuel cycle dependent MCPR operating limits.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

TS 3.1.4, "Control Rod Scram Times" satisfies the following regulatory requirements:

10 CFR 50.36(c)(2)(ii)(C) Criterion 3

A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or

presents a challenge to the integrity of a fission product barrier.

10 CFR 50 Appendix A, GDC 10 - Reactor Design

The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

The original design of DNPS, Units 2 and 3, was reviewed and approved against the draft General Design Criteria (GDC) issued in July 1967. Updated Final Safety Analysis Report (UFSAR), Section 3.1, "Conformance with NRC General Design Criteria," provides an assessment against the 70 draft GDC published in 1967 and concluded that the plant specific requirements are sufficiently similar to the Appendix A GDC. Therefore, the equivalent draft GDC used at DNPS is functionally equivalent to 10 CFR 50 Appendix A, GDC 10.

4.2 Precedent

The Dresden scram speeds were previously revised to reflect using the GE methodology for specifying the TS time limits during a prior fuel transition to GE14 fuel in 2001 (ADAMS Accession Nos. ML003756771 and ML012950202, References 6.7 and 6.8). The current proposed revision of the values of the TS limits reflects the differences between GE14 and GNF3 fuel using the same NRC-approved GE methodology.

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) requests an amendment to Renewed Facility Operating License Nos. DPR-19 and DPR-25 for Dresden Nuclear Power Station (DNPS), Units 2 and 3, respectively. Specifically, the proposed change would revise control rod scram time limits in DNPS Technical Specifications (TS) Table 3.1.4-1 to regain margin for reactor vessel overpressure.

CEG has evaluated the proposed change against the criteria of 10 CFR 50.92(c) to determine if the proposed change results in any significant hazards. The following is the evaluation of each of the 10 CFR 50.92(c) criteria:

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

   Response: No

   The requested changes to the TS Table 3.1.4-1 scram times are based on ensuring that the analytical approach utilized by Global Nuclear Fuels – America LLC (GNF) is met. There are no other changes to TS 3.1.4 (e.g., the number of slow rods allowed is unchanged). A scram time slower than required might result in an increase in the consequences of an accident. The CEG proposed changes do not constitute an increase to any consequences to any accidents because the revised allowed scram

times are bounded by the GNF analysis which demonstrates that all required limits are met.

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

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

Response: No

The proposed change does not affect the design, functional performance, or normal operation of the facility. Similarly, it does not affect the design or operation of any component in the facility such that new equipment failure modes are created.

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 amendment involve a significant reduction in a margin of safety?

Response: No

Sufficiently rapid insertion of control rods following certain accidents (scram time) will prevent fuel damage, and thereby maintain a margin of safety to fuel damage. The proposed change to the control rod scram time limits does not constitute a change in the operation of the facility and hence do not involve a significant reduction in the margin of safety.

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

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

4.4 Conclusion

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 to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment 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 amendment 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 amendment 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 amendment.

6.0 REFERENCES

6.1 Dresden Nuclear Power Station, Units 2 and 3 Technical Specifications

6.2 Dresden Nuclear Power Station Updated Final Safety Analysis Report (UFSAR), Revision 14, dated June 2021

6.3 NEDO-24154, "Qualification of the One-Dimensional Core Transient Model for Boiling Water Reactors," dated October 1978 (ADAMS Accession No. ML19269C819)

6.4 "Safety Evaluation for the General Electric Topical Report Qualification of the One-Dimensional Core Transient Model for Boiling Water Reactors, NEDO-24154 and NEDE-24154-P, Volumes I, II, and III," dated June 1980 (ADAMS Accession No. ML03121015)

6.5 "Supplemental Safety Evaluation for the General Electric Topical Report Qualification of the One-Dimensional Core Transient Model for Boiling Water Reactors, NEDO-24154 and NEDE-24154-P, Volumes I, II, and III," dated January 1981 (ADAMS Accession No. ML031210226)

6.6 General Electric Licensing Topical Report NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel, (GESTAR II — Base Document (NEDE–24011–P–A, Main)," Revision 31, dated November 2020 (ADAMS Accession No. ML20330A199 for the non-proprietary version)

6.7 Letter from R.M. Krich (Commonwealth Edison (ComEd)) to U. S. NRC, "Request for Technical Specifications Change, Transition to General Electric Fuel," dated September 29, 2000 (ADAMS Accession No. ML003756771)

6.8 Letter from S. Bailey (U. S. NRC) to O. Kingsley (Exelon Generation Company, LLC), "Issuance of Amendments (TAC NOS. MB0170, MB0171, MB1337, MB1338, MB2715, and MB2716," dated November 2, 2001 (ADAMS Accession No. ML012950202)

ATTACHMENT 2

Markup of Proposed Technical Specifications Page

Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25

REVISED TECHNICAL SPECIFICATIONS PAGE

3.1.4-3

Table 3.1.4-1 (page 1 of 1)
Control Rod Scram Times

NOTES

1. OPERABLE control rods with scram times not within the limits of this Table are considered "slow."

2. Enter applicable Conditions and Required Actions of LCO 3.1.3, "Control Rod OPERABILITY," for control rods with scram times > 7 seconds to 90% insertion. These control rods are inoperable, in accordance with SR 3.1.3.4, and are not considered "slow."

PERCENT INSERTION	SCRAM TIMES[(a)(b)] (seconds) when REACTOR STEAM DOME PRESSURE ≥ 800 psig
5	~~0.48~~ 0.45
20	~~0.89~~ 0.85
50	~~1.98~~ 1.80
90	~~3.44~~ 3.00

(a) Maximum scram time from fully withdrawn position based on de-energization of scram pilot valve solenoids at time zero.

(b) Scram times as a function of reactor steam dome pressure when < 800 psig are within established limits.