



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

July 26, 2021

MEMORANDUM TO: Margaret M. Doane
Executive Director for Operations

FROM: Andrea D. Veil, Director */RA/*
Office of Nuclear Reactor Regulation

SUBJECT: RESPONSE TO THE OFFICE OF THE EXECUTIVE DIRECTOR
FOR OPERATIONS TICKET TO DETERMINE IF ADDITIONAL
TECHNICAL SPECIFICATIONS ARE REQUIRED FOR
UNDERVOLTAGE PROTECTION AT OCONEE NUCLEAR STATION
(TICKET NO. OEDO-21-00048)

This memorandum responds to the U.S. Nuclear Regulatory Commission's (NRC's) Office of the Executive Director for Operations (OEDO) Ticket No. OEDO-21-00048 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21032A240) regarding undervoltage protection at the Oconee Nuclear Station, Units 1, 2, and 3 (Oconee).

Background

On January 28, 2021, the Executive Director for Operations (EDO) issued the memorandum, "Differing Professional Opinion [DPO] Appeal Concerning Degraded Voltage Protection at the Oconee Site (DPO-2019-001)" (ADAMS Accession No. ML21022A048), to Roy K. Mathew. Enclosure 2 to the EDO's memorandum included a tasking to the Office of Nuclear Reactor Regulation (NRR) to determine whether additional technical specifications identifying relay setpoints and associated time delays are required for degraded voltage relay protection at Oconee Nuclear Station, in accordance with the backfit rule.

The NRC staff reviewed the DPO case file and Oconee licensing documents and performed a backfit assessment, which is enclosed, based on Management Directive 8.4, "Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests," dated September 20, 2019 (ADAMS Accession No. ML18093B087).

Enclosure:
Backfit Assessment

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Summary

The EDO directed the NRC staff to determine whether the NRC should impose additional surveillance requirements on the licensee via backfitting. Specifically, the EDO directed the staff to determine whether additional surveillance requirements for relay setpoints and associated time delays are required for undervoltage protection at the 4,160-volt (V) level for Technical Specification 3.3.17, "Emergency Power Switching Logic (EPSL) Automatic Transfer Function," and Technical Specification 3.3.18, "Emergency Power Switching Logic (EPSL) Voltage Sensing Circuits," at Oconee under Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36(c)(3), in accordance with the backfit rule (10 CFR 50.109). Section 50.36(c)(3) requires surveillance requirements relating to testing, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

The NRC staff applied the Commission's policy in Management Directive 8.4 and concluded the following:

1. Oconee's electrical design is unique in that the station does not have emergency diesel generators but does have five available sources of power to the Engineered Safeguards Protective System (ESPS) at the 4,160-V level. Degraded voltage protection is at the 230-kilovolt (kV) and 100-kV levels to ensure quality power is provided to the ESPS at the 4,160-V level. There is no degraded voltage protection at the ESPS buses at the 4,160-V level. Oconee's electrical power system design is distinctly different from the system assumed for NUREG-1430, "Standard Technical Specifications for Babcock and Wilcox Plants, Revision 4" (ADAMS Accession No. ML12100A177).
2. Oconee's licensing history and nuclear power plant events pertaining to degraded voltage span numerous decades, starting with a degraded voltage event at the Millstone Power Station, Unit 2 in 1976. The NRC staff captured a timeline of the pertinent events, licensing actions, and staff decisions regarding degraded voltage protection at Oconee and included it in the enclosed backfit assessment.
3. The NRC staff assessed the risk reduction associated with adding a new surveillance requirement to perform a channel calibration of the voltage sensing circuits channels. The results yielded a mean delta core damage frequency value of approximately 2×10^{-8} /year. The potential risk benefit of a lower base core damage frequency for Oconee that would be gained by adding the new surveillance requirement would be bounded by these risk results and, thus, would have very low safety significance. Therefore, the staff concluded that the safety significance of the new surveillance requirement does not meet the threshold for using the adequate protection exceptions to perform a backfit analysis, nor does it constitute a substantial increase in overall protection at Oconee.
4. Surveillance Requirement 3.3.17.1 verifies the automatic transfer to another power source. The existing surveillance requirement is adequate to check for operability of bus transfer. Additional technical specifications identifying relay setpoints and time delays are not needed because the function served for these relays is not credited for the purpose of detecting undervoltage or degraded voltage to initiate bus transfer within the design basis limits.

5. Surveillance Requirement 3.3.18.1 verifies voltage is present at the incoming sources and provides trip signals to the N, E, and SL circuit breakers (the normal incoming breakers, the start-up incoming breakers, and the common transformer No. 5 breakers, respectively), at the 4,160-V level. Additional surveillance requirements identifying setpoints and time delays are not needed because, once the demand signal for EPSL is initiated, the voltage sensing circuits only verify voltage is present at any of the available sources. Moreover, the 230-kV degraded voltage protection, 100-kV degraded voltage protection, and 4,160-V main feeder bus undervoltage protection already check for sufficient voltage at the incoming sources and initiate a bus transfer. The voltage sensing circuits assist in selecting available back-up sources of power and are not needed for initiating a bus transfer.
6. The NRC staff reviewed past licensing actions associated with Oconee's electrical system and did not identify any errors or omissions that would necessitate the NRC staff's imposition of additional requirements on the licensee to bring its facility into compliance with NRC regulations.

Conclusion

The NRC staff concludes that the safety significance of the proposed surveillance requirements does not justify the NRC backfitting the licensee to ensure its facility provides adequate protection, nor do the additional requirements provide a substantial increase in overall protection of the public health and safety or the common defense and security. In addition, the EDO requested the staff to determine if the NRC can impose a backfit under 10 CFR 50.36(c). Based on its review of Oconee's licensing history, the NRC staff did not identify any errors or omissions in past licensing actions that would necessitate the NRC backfitting the licensee to bring its facility into compliance. This decision takes into consideration the fact that the Oconee electrical power system design is unique and distinctly different from the system used for developing the standard technical specifications in NUREG-1430. The NRC staff has found in the past, and reaffirmed in this evaluation, that including a surveillance requirement for relay setpoints and associated time delays at the 4,160-V level of the Oconee electrical distribution system is not required to meet the specified objectives and criteria of 10 CFR 50.36(c). Accordingly, the NRC staff concludes that backfitting is not justified.

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SUBJECT: RESPONSE TO THE OFFICE OF THE EXECUTIVE DIRECTOR FOR OPERATIONS TICKET TO DETERMINE IF ADDITIONAL TECHNICAL SPECIFICATIONS ARE REQUIRED FOR UNDERVOLTAGE PROTECTION AT OCONEE NUCLEAR STATION (TICKET NO. OEDO-21-00048) DATED JULY 26, 2021

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Enclosure - Backfit Assessment: ML21154A142

NRR-106

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