



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

March 11, 2016

Mr. C. R. Pierce
Regulatory Affairs Director
Southern Nuclear Operating Co., Inc.
P.O. Box 1295, Bin 038
Birmingham, AL 35201-1295

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 - REQUEST FOR
ADDITIONAL INFORMATION (CAC NOS. MF7106 AND MF7107)

Dear Mr. Pierce:

By letter dated November 20, 2015, as supplement on January 12, 2016, the Southern Nuclear Operating Company, Inc. (SNC), submitted a request to revise the Joseph M. Farley Nuclear Plant, Units 1 and 2, Technical Specifications (TSs). The proposed change would revise the setpoint requirements in TS 3.3.5, "Loss of Power Diesel Generator Start Instrumentation," for the 4.16 kV Emergency Bus Degraded Grid Voltage Actuation and Alarm functions.

The NRC staff has determined that additional information is needed as discussed in the Enclosure. We request that SNC respond within 30 days of the date of this letter. Please note that the NRC staff's review is continuing and further requests for information may be developed.

Sincerely,

A handwritten signature in black ink that reads "Shawn Williams".

Shawn Williams, Project Manager
Plant Licensing Branch, II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-348, 50-364

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

DOCKET NOS. 50-348 AND 50-364

By letter dated November 20, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15324A297), and as supplemented on January 12, 2016 (ADAMS Accession No. ML16012A457), Southern Nuclear Operating Company (the licensee) requested an amendment to the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2. The proposed amendment would revise the FNP, Units 1 and 2, Technical Specifications (TS). This amendment request proposes to revise the setpoint requirements in TS 3.3.5, "Loss of Power Diesel Generator Start Instrumentation," for the 4.16 kV Emergency Bus Degraded Grid Voltage Actuation and Alarm functions.

The U.S. Nuclear Regulatory Commission staff is reviewing the submittal and has determined that the additional information is needed to complete its review.

RAI No. 1:

In Enclosure 1, page E1-3, of the License Amendment Request (LAR), it was stated "Because the new solid-state relays provide for discrete setting of actuation delay time rather than actuating according to an inverse-time characteristic curve like the existing induction disc relays, a Delay Time column is added to Table 3.3.5-2." It was also stated "Installation of the new DVRs [degraded voltage relays] is planned to be performed one bus at a time over two successive refueling outages for each unit, beginning with Bus 2G in spring 2016 (2R24) and Bus 1G in fall 2016 (1R27)."

Please explain the basis for not replacing the induction type relays with solid state relays for loss of voltage (LOV) relays. Provide vendor supplied operating curves for the new solid state 27N type relays as well as induction disc relays (currently in use).

Enclosure

RAI No. 2:

Calculation SE-SNC529029-001, Table 6 (ADAMS Accession No. ML16012A457) listed low degraded voltage margins for motors and motor operated valves (MOVs) as shown below.

Table 6. Low Degraded Voltage Margin Motors and MOVs per Attachment 1.				
Motor Name	Case Study	Voltage Req.	Voltage	Margin
MOV 8803A	MS 1.5F	75.30%	75.78%	0.48%
MOV 3024A	MS 1.5F	72.87%	72.87%	0.00%
MOV 3024B	MS 1.5F	72.87%	72.87%	0.00%
LCV 0115B	MS 1.5F	74.96%	75.42%	0.46%
MOV V516	MS 1.5G	75.09%	75.59%	0.50%
MOV 8803B	MS 1.5G	68.35%	68.76%	0.41%
MOV 8100	MS 1.5G	68.35%	68.63%	0.28%
MOV 3232A	MS 1.5G	73.19%	71.32%	-1.87%*
MOV 3232B	MS 1.5G	68.02%	66.29%	-1.73%*
MOV 3232C	MS 1.5G	68.02%	66.29%	-1.73%*
LCV 0115D	MS 1.5G	68.35%	68.74%	0.39%
MOV 3318A	MS 1.5G	70.00%	69.93%	-0.07%**
MOV 2769B	MS 1.5G	68.65%	68.65%	0.00%
MOV 3478B	MS 1.5G	70.41%	70.41%	0.00%
Ctrl Rm Press Supply Fan B	MS 1.5G	74.00%	74.23%	0.23%
Ctrl Rm HVAC Blower 1B	LF 1.4G	90.00%	90.12%	0.12%
Ctrl Rm Rad Monitor B	LF 1.3G	90.00%	88.31%	1.69%***

*Licensee provided Assumption 3 for undervoltage justification (see LAR)

**Recommended for TOL replacement

***Licensee provided Attachment 1, Note 6 for undervoltage justification (see LAR)

In regards to the information on this table, please answer the following questions:

- a) Based on the table above, the available voltage at the terminals of the MOVs 3232A, 3232B, 3232C, 2769B, and 3478B appear to have negative or no margin. Please provide sufficient technical and regulatory bases to verify that these MOVs will perform their worst-case design basis safety functions such as opening or closing the valves within the times assumed in the design basis including the required minimum required open/close coil pickup voltage (control circuit voltage) without actuating the protective devices such as breakers, relays, fuses etc.

- b) Case Studies MS 1.5F and MS 1.5G with group start (assuming safety injection signal present) and degraded voltage show that they are near the TS lower allowable value of 3760.75V (Enclosure 3, Supplement dated January 12, 2016). Please provide the available voltage at the motor control centers (listed in Table 6) and at MOV motor terminals. Also, please provide evaluations that confirm that these MOVs have adequate starting torque and close/open coil pickup voltage.
- c) MOVs 3318A for Units 1 and 2 would achieve the required voltage by replacement of the thermal overload (TOL) heater with one of a lower resistance. Please clarify whether the modifications associated with this replacement are completed or not. If not, provide justification why this condition is acceptable until the modifications are completed.

RAI No. 3:

In calculation SE-SNC529029-001, Version 1.0 (Enclosure 1, Supplement dated January 12, 2016), Assumptions Section, it states "minimum expected grid voltage of 101.0% at the 230 kV Reference Bus is assumed and utilized in the ETAP model based on contingency studies defined by the FSAR (Farley Nuclear Plant, Units 1 and 2, FSAR, Rev. 26, Feb. 2015)." In FSAR, Section 8.2.2.4, it states "System voltages for worst-case contingencies are expected to remain at or above 100% of 230 kV." It was also stated "The value of 100% assures acceptable terminal voltages, with margin, for safe shutdown equipment to perform its safety function. Therefore, continued unit operation is acceptable in the unlikely event that system voltage is found to be < 101.6% but above 100%."

Please provide the technical basis for not using the 100% of 230 kV of the system voltage in determining the degraded voltage relay (DVR) setpoints and limiting components.

RAI No. 4:

In calculation SJ-SNC529029-001 (Enclosure 3, Supplement dated January 12, 2016) for Bus 1F, the lower allowable value and lower analytical value are calculated as 3760.75 V and 3726.11 V, respectively. In regards to this information, please answer the following questions:

- a) Provide the technical /regulatory basis for not using lower analytical value 3726.11 V in determining the limited components.
- b) Demonstrate that before reaching the DVR lower analytical limit or lower allowable value, including the time delays, all loads can meet their design functions during the worst-case design basis accidents/events without tripping the protective devices such as fuses, breakers, relays (TOLs).
- c) Provide the purpose of non-TS alarm and which actions will be prompted if it is actuated.

RAI No. 5:

In Section 2.0 "Detailed Description," of the LAR, the licensee provided the proposed changes to Table 3.3.5-2. The licensee noted that this table differs from the current TS Table 3.3.5-1 as follows:

1. Function 1, "4.16 kV Emergency Bus Loss of Voltage DG Start' and Function 2, "4.16 kV Emergency Bus Degraded Grid Voltage Actuation," has the Trip Setpoint column replaced by a new Delay Time column,
2. Function 2 has the singular Allowable Value (AV) voltage range specified for all buses replaced with new AV lower limits specified for each 4.16 kV bus (1F, 1G, 2F and 2G), and
3. Function 3, "4.16 kV Emergency Bus Degraded Grid Voltage Alarm," is deleted.

NUREG-0800, "Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants," Appendix 8-A, "Branch Technical Position (PSB) PSB-1: Adequacy of Station Electric Distribution System Voltages," states that the licensee's analysis must show that the existing setpoints and time delays are adequate to ensure that all safety-related loads are protected and all required safety-related loads have the required minimum voltage at the component terminal to start and run to support a worst-case design basis event (DBE) without any credit for administratively controlled voltage. PSB-1 states the following:

"Two separate time delays shall be selected for the second level of undervoltage protection..."

"The Technical Specifications shall include limiting conditions for operations, surveillance requirements, trip setpoints with minimum and maximum limits, and allowable values for the second-level voltage protection sensors and associated time delay devices."

Based on PSB-1 and as pertaining to trip setpoints, and alarms, please respond to the following questions:

- a) Function 1, "4.16 kV Emergency Bus Loss of Voltage DG Start' and Function 2, "4.16 kV Emergency Bus Degraded Grid Voltage Actuation," has the Trip Setpoint column replaced by a new Delay Time column that only displays one time delay. Please explain how: 1) FNP is complying with PSB-1 in regards to the use of two time delays, and 2) provide technical and regulatory bases for deleting the trip setpoint column from the Technical Specifications.
- b) Function 3, "4.16 kV Emergency Bus Degraded Grid Voltage Alarm," is deleted from the TS. Please explain how FNP is complying with PSB-1 in regards to the deletion of the 4.16 kV Emergency Bus Degraded Grid Voltage Alarm from the Technical Specifications.

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/RA/

Shawn Williams, Project Manager
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ADAMS Accession No.: **ML16060A161** *by internal memo **ML16053A004I**

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