

August 23, 2023

NL-23-0713
10 CFR 50.90

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

Joseph M. Farley Nuclear Plant Units 1 and 2
Docket Nos. 50-348 and 50-364

Subject: Response to Request for Additional Information Regarding Emergency License
Amendment Request: Technical Specification 3.6.5, Containment Air Temperature,
One-Time Temporary Change to Limit

On August 22, 2023, pursuant to the provisions of 10 CFR 50.90 and 10 CFR 50.91(a)(5), Southern Nuclear Operating Company (SNC) submitted an emergency license amendment request (LAR) (ADAMS Accession No. ML23234A151) for Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2 renewed facility operating licenses NPF-2 and NPF-8, respectively. The requested amendment would temporarily revise the operating license, Appendix A Limiting Condition for Operation (LCO) 3.6.5, Containment Air Temperature, limit on containment average air temperature from 120°F to 122°F effective until 0600 hours on September 9, 2023.

On August 22, 2023, the Nuclear Regulatory Commission (NRC) Staff issued a final Request for Additional Information (RAI) seeking clarifications related to the requested LAR. The Enclosure provides the responses to RAI numbers SNSB - RAI 1 through SNSB - RAI 4. RAI number ELTB – RAI 5 will be provided in a subsequent transmittal.

This letter contains no regulatory commitments. This letter has been reviewed and determined not to contain security-related information.

In accordance with 10 CFR 50.91, SNC is notifying the State of Alabama by transmitting a copy of this letter and its enclosure to the designated State Official.

If you have any questions, please contact Ryan Joyce at 205-992-6468.

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I declare under penalty of perjury that the foregoing is true and correct. Executed on the 23rd day of August 2023.

Respectfully submitted,



Ryan Joyce

Manager, Regulatory Affairs

Southern Nuclear Operating Company

Enclosure: SNC Response to NRC RAIs SNSB - RAI 1 through SNSB - RAI 4

Attachment: FNP Unit 1 and Unit 2 Service Water Temperature Graph

cc: Regional Administrator, Region II
NRR Project Manager – Farley 1 & 2
Senior Resident Inspector – Farley 1 & 2
Alabama – State Health Officer for the Department of Public Health
RType: CFA04.054

Response to Request for Additional Information Regarding Emergency License Amendment
Request: Technical Specification 3.6.5, Containment Air Temperature, One-Time Temporary
Change to Limit

Enclosure

SNC Response to NRC RAIs SNSB - RAI 1 through SNSB - RAI 4

On August 22, 2023, pursuant to the provisions of 10 CFR 50.90 and 10 CFR 50.91(a)(5), Southern Nuclear Operating Company (SNC) submitted an emergency license amendment request (LAR) for Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2 renewed facility operating licenses NPF-2 and NPF-8, respectively. The requested amendment would temporarily revise the operating license, Appendix A Limiting Condition for Operation (LCO) 3.6.5, Containment Air Temperature, limit on containment average air temperature from 120°F to 122°F effective until 0600 hours on September 9, 2023.

On August 22, 2023, the Nuclear Regulatory Commission (NRC) Staff issued a final Request for Additional Information (RAI) via email seeking clarifications related to the requested LAR. Responses to RAIs SNSB - RAI 1 through SNSB - RAI 4 are provided below. RAI number ELTB – RAI 5 will be provided in a subsequent transmittal.

SNSB - RAI 1:

In section 3.0, sub-section 'Instrument Uncertainty' of the enclosure to the LAR, the licensee states that the instrument uncertainty calculation demonstrates sufficient margin to the safety analysis initial condition of 127 °F. Based on the proposed updated Containment Air Temperature limit update to 122 °F, please describe how do the existing containment maximum temperatures analyses for the LOCA and MSLB, which currently assume an initial bulk containment temperature of 127°F, remain bounding?

SNC Response

The total Channel Statistical Allowance (CSA) or the total channel uncertainty for the Containment Average Air Temperature instrumentation is calculated to be $\pm 2.5^{\circ}\text{F}$ when statistically combining 4 channels. The proposed Technical Specifications LCO limit of $\leq 122^{\circ}\text{F}$ protects the Safety Analysis Limit (SAL) of 127°F and given the CSA of $\pm 2.5^{\circ}\text{F}$ yields a margin of 2.5°F.

The methodology used is the Square Root of the Sum of the Squares (SRSS) of independent components which is widely utilized in the industry. The use of probabilistic and statistical techniques to determine safety related and non-safety related set points has been endorsed by various industry standards. In particular, the methodology used in channel uncertainty for the Containment Average Air Temperature instrumentation calculation is consistent with the methodology in WCAP 13751, Westinghouse Setpoint Methodology For Protection Systems Farley Nuclear Plant Units 1 and 2 (which the NRC found acceptable for use in deriving Reactor Trip and Engineered Safety Feature Actuation System setpoints [ML013130715]).

SNSB - RAI 2:

In section 3.0, sub-section 'Sufficient Safety Margins are Maintained' of the enclosure to the LAR, the licensee states that the LOCA analysis assumes an accumulator liquid temperature of 120 °F and a Refueling Water Storage Tank (RWST) initial temperature of 110 °F. The licensee further states that the 2°F increase to the accumulator liquid can be more than offset by assuming the RWST initial temperature of 100°F. Please provide details on the administrative controls that will be put in place to ensure the RWST initial temperature limit is not exceeded.

SNC Response

Operations logs RWST temperature once per 24 hours at midnight each day. Unit 1 Admin Tracking Item (ATI) 2608 and Unit 2 Admin Tracking Item (ATI) 2142 requires control room operators to verify RWST temperature remains less than 100 F.

SNSB - RAI 3:

Table 6.2-3 of the FSAR for Farley Units 1 and 2 states the Service Water (SW) temperature at 95°F as the initial condition for the analysis. In section 3, sub-section '*Service Water and Ultimate Heat Sink Evaluation*' of the LAR, the licensee states that the small increase in containment temperature at the start of the event represents an insignificant effect compared to the magnitude of decay heat from both units. However, there is no discussion present on how the SW temperature change due to higher outside temperatures will impact the Containment Air Temperature limit value. Please provide historical data for the SW temperature and any potential adverse impact on the Containment Air Temperature limit due to higher outside temperatures.

SNC Response

Refer to the Attachment for recent Unit 1 and Unit 2 Service Water Temperature graphs.

While the ultimate heat sink (UHS) (i.e., the source for SW) temperature might be expected to rise in conjunction with the projected increased ambient temperatures, FNP does not anticipate the ultimate heat sink to exceed its Technical Specification limit of 95°F (Surveillance Requirement 3.7.9.2), which is consistent with analysis assumptions. As such, there will be no adverse impact as a result of an increase in SW temperatures within the TS limits on the evaluations provided in the requested amendment.

SNSB - RAI 4:

Please verify that the requirement of assurance of equipment operability and containment integrity, as required by GL 96-06, will be met during operating with higher Containment Air Temperature limit.

SNC Response:

SNC response to GL 96-06 continues to be based on the current calculation of record and remains unaffected. The current Farley analyses determine that the water hammer pressure spikes at the containment air coolers are not significant enough to cause damage, demonstrating that Farley is not susceptible to the Generic Letter 96-06 concerns. A containment air temperature increase from 120°F to 122°F has a negligible impact on the current analysis. The waterhammer analysis identified that the region of the service water piping that is most susceptible to water hammer is the containment cooler return piping with lowest possible system backpressure. However, this analysis showed that no waterhammer will occur within this piping. Following a LOCA coincident with a LOSP, both the containment cooler fans and service water pumps are de-energized resulting in reduced air and service water flows through the coolers. Therefore, the heat transfer from the containment atmosphere will be less than the full capacity of the containment coolers. In the time interval of interest (25 seconds or less) following initiation of this event, the service water downstream of the containment coolers has been calculated to reach a maximum of 119°F. Even assuming that the service water downstream of the containment coolers picks up an additional 2°F the maximum temperature will still be less than the 164°F temperature required to form a vapor cavity.

Service water temperature, along with its associated vapor pressure, will rise rapidly following containment cooler fan restart. However, the increase in the service water's vapor pressure, caused by the service water's temperature rise, will not reach the increased pressure in the containment cooler discharge piping. Therefore, two phase flow conditions still will not occur.

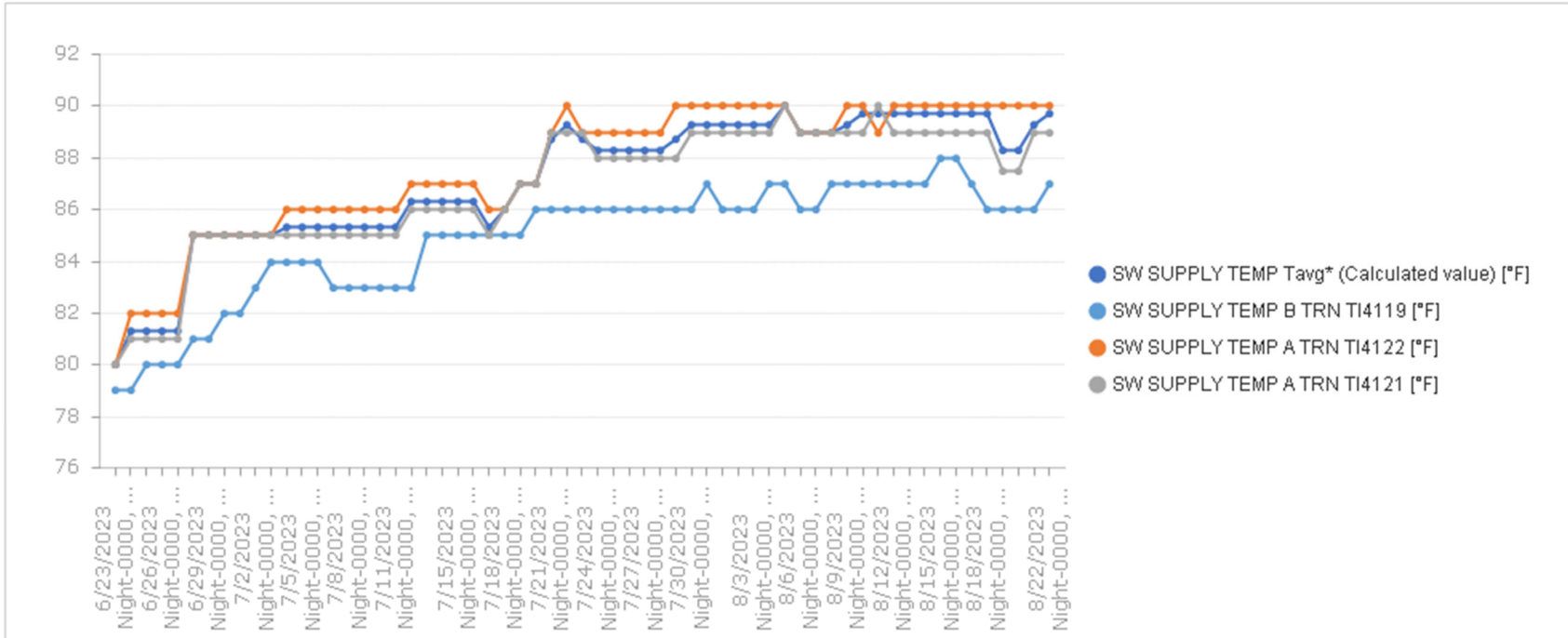
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Attachment

FNP Unit 1 and Unit 2 Service Water Temperature Graph

Attachment to NL-23-0713
 Unit 1 and Unit 2 Service Water Temperatures

Unit 1 Service Water



Attachment to NL-23-0713
 Unit 1 and Unit 2 Service Water Temperatures

Unit 2 Service Water

