

December 21, 2017

NL-17-0190

Docket Nos.: 50-348  
50-364U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555-0001

Joseph M. Farley Nuclear Plant - Units 1 and 2  
Revise Actions for One Steam Supply to Turbine Driven Auxiliary Feedwater  
Pump Inoperable using the Consolidate Line Item Improvement Process

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), Southern Nuclear Operating Company (SNC) is submitting a request for an amendment to the technical specifications (TS) for Joseph M. Farley Nuclear Plant (FNP) Units 1 and 2.

The proposed amendment establishes Conditions, Required Actions, and Completion Times in the TS for the Condition where one steam supply to the turbine driven Auxiliary Feedwater (AFW) pump is inoperable concurrent with an inoperable motor driven AFW train. In addition, this amendment establishes changes to the TS, that establish specific Actions: (1) for when two motor driven AFW trains are inoperable at the same time and; (2) for when the turbine driven AFW train is inoperable either (a) due solely to one inoperable steam supply, or (b) due to reasons other than one inoperable steam supply. The change is consistent with NRC-approved Technical Specification Task Force (TSTF) Traveler, TSTF-412, Revision 3, "Provide Actions for One Steam Supply to Turbine Driven AFW/EFW Pump Inoperable." The availability of this technical specification improvement was announced in the *Federal Register* on July 17, 2007 as part of the consolidated line item improvement process (CLIIP).

Enclosure 1 provides a description of the proposed changes and confirmation of applicability.

Enclosure 2 provides the existing TS pages marked-up to show the proposed changes.

Enclosure 3 provides the clean typed TS pages to show the proposed changes.

Enclosure 4 provides the existing TS Bases pages marked-up to reflect the proposed changes (information only).

SNC requests approval of the proposed license amendments by December 21, 2018. The proposed changes will be implemented within 90 days of issuance of the amendment.

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at 205.992.7369.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 21<sup>st</sup> day of December 2017.

Respectfully submitted,



J. J. Hutto  
Regulatory Affairs Director

JJH/GKM/KGL

Enclosure: 1. Description and Assessment  
2. FNP Technical Specification Marked Up Pages  
3. FNP Technical Specification Clean Typed Pages  
4. FNP Technical Specification Bases Marked Up Pages  
(for information only)

cc: Regional Administrator, Region II  
NRR Project Manager – Farley  
Senior Resident Inspector – Farley  
Director, Alabama Office of Radiation Control  
RType: CFA04.054

**Joseph M. Farley Nuclear Plant, Units 1 and 2**  
**License Amendment Request for Technical Specification Improvement**  
**to Revise Actions for One Steam Supply to Turbine Driven Auxiliary**  
**Feedwater Pump Inoperable using the Consolidate Line Item**  
**Improvement Process**

**Enclosure 1**

**Description and Assessment**

## Description and Assessment

### 1.0 DESCRIPTION

The proposed license amendment establishes a new Completion Time for technical specifications section 3.7.5 where one steam supply to the turbine driven AFW pump is inoperable concurrent with an inoperable motor driven AFW train. This amendment also establishes specific Conditions and Action requirements: (1) for when two motor driven AFW trains are inoperable at the same time and; (2) for when the turbine driven AFW train is inoperable either (a) due solely to one inoperable steam supply, or (b) due to reasons other than one inoperable steam supply.

The changes are consistent with NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-412, Revision 3, "Provide Actions for One Steam Supply to Turbine Driven AFW Pump Inoperable." The availability of this technical specification improvement was announced in the *Federal Register* on July 17, 2007 (72 FR 39089) as part of the consolidated line item improvement process (CLIIP).

### 2.0 ASSESSMENT

#### 2.1 Applicability of Published Safety Evaluation

Southern Nuclear Operating Company (SNC) has reviewed the safety evaluation published on July 17, 2007 (72 FR 39089) as part of the CLIIP. This verification included a review of the NRC staff's evaluation as well as the supporting information provided to support TSTF-412, Revision 3. SNC has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2 and justify this amendment for the incorporation of the changes to the FNP Technical Specifications.

#### 2.2 Optional Changes and Variations

SNC is not proposing any variations or deviations from the technical specification changes described in TSTF-412, Revision 3, or the NRC staff's model safety evaluation published in the *Federal Register* on July 17, 2007 (72 FR 39089).

### 3.0 REGULATORY ANALYSIS

A description of the proposed change and its relationship to applicable regulatory requirements and guidance was provided in the Notice of Availability published on July 17, 2007 (72 FR 39089).

#### 3.1 No Significant Hazards Determination

SNC has reviewed the proposed no significant hazards consideration determination published on July 17, 2007 as part of the CLIIP. SNC has concluded that the proposed determination presented in the notice is applicable to FNP and the determination is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

### 3.2 Verification and Commitments

There are no new regulatory commitments associated with this proposed change.

### 4.0 ENVIRONMENTAL EVALUATION

SNC has reviewed the environmental evaluation included in the model safety evaluation published in the Federal Register on July 17, 2007 (72 FR 39089) as part of the CLIIP. SNC has concluded that the NRC staff's findings presented in that evaluation are applicable to FNP and the evaluation is hereby incorporated by reference for this application.

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**Enclosure 2**

**FNP Technical Specification Marked Up Pages**

### 3.7 PLANT SYSTEMS

#### 3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

#### ACTIONS

-----NOTE-----  
LCO 3.0.4b is not applicable.  
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CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. <del>Turbine driven AFW train inoperable due to one inoperable steam supply</del>One steam supply to turbine driven AFW pump inoperable.</p> <p><u>OR</u></p> <p>-----NOTE----- Only applicable if MODE 2 has not been entered following refueling. ----- One turbine driven AFW pump inoperable in MODE 3 following refueling.</p>	A.1 Restore affected equipment to OPERABLE status.	7 days
B. One AFW train inoperable for reasons other than Condition A.	B.1 Restore AFW train to OPERABLE status.	72 hours

#### ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<u>C.</u> Turbine driven AFW train inoperable due to one inoperable steam supply.  <u>AND</u>  One motor driven AFW train inoperable.	<u>C.1</u> Restore the steam supply to the turbine driven train to OPERABLE status.  <u>OR</u>  <u>C.2</u> Restore the motor driven AFW train to OPERABLE status.	<u>24 hours</u>   <u>24 hours</u>
<u>DC.</u> Required Action and associated Completion Time <del>offer</del> Condition A, B, or <u>CB</u> not met.  <u>OR</u>  Two AFW trains inoperable <u>for reasons other than Condition C.</u>	<u>DC.1</u> Be in MODE 3.  <u>AND</u>  <u>DC.2</u> Be in MODE 4.	6 hours   12 hours
<u>ED.</u> Three AFW trains inoperable.	<u>ED.1</u> -----NOTE----- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. -----  Initiate action to restore one AFW train to OPERABLE status.	         Immediately

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.5.1 -----NOTE----- AFW train(s) may be considered OPERABLE during alignment and operation for steam generator level	

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**Enclosure 3**

**FNP Technical Specification Clean Typed Pages**

### 3.7 PLANT SYSTEMS

#### 3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

#### ACTIONS

-----NOTE-----  
LCO 3.0.4b is not applicable.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Turbine driven AFW train inoperable due to one inoperable steam supply.</p> <p><u>OR</u></p> <p>-----NOTE----- Only applicable if MODE 2 has not been entered following refueling. ----- One turbine driven AFW pump inoperable in MODE 3 following refueling.</p>	<p>A.1 Restore affected equipment to OPERABLE status.</p>	<p>7 days</p>
<p>B. One AFW train inoperable for reasons other than Condition A.</p>	<p>B.1 Restore AFW train to OPERABLE status.</p>	<p>72 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Turbine driven AFW train inoperable due to one inoperable steam supply.</p> <p><u>AND</u></p> <p>One motor driven AFW train inoperable.</p>	<p>C.1 Restore the steam supply to the turbine driven train to OPERABLE status.</p>	24 hours
	<p><u>OR</u></p> <p>C.2 Restore the motor driven AFW train to OPERABLE status.</p>	24 hours
<p>D. Required Action and associated Completion Time of Condition A, B, or C not met.</p> <p><u>OR</u></p> <p>Two AFW trains inoperable for reasons other than Condition C.</p>	<p>D.1 Be in MODE 3.</p>	6 hours
	<p><u>AND</u></p> <p>D.2 Be in MODE 4.</p>	12 hours
E. Three AFW trains inoperable.	<p>E.1 -----NOTE-----  LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status.  -----  Initiate action to restore one AFW train to OPERABLE status.</p>	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.1 -----NOTE----- AFW train(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation.</p> <p>-----</p> <p>Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.5.2 -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq 1005</math> psig in the steam generator.</p> <p>-----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p>	<p>In accordance with the Inservice Testing Program.</p>
<p>SR 3.7.5.3 -----NOTE----- AFW train(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation.</p> <p>-----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

# SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.4	<p>-----NOTES-----</p> <p>1. Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq 1005</math> psig in the steam generator.</p> <p>2. AFW train(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation.</p> <p>-----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.5	Verify the turbine driven AFW pump steam admission valves open when air is supplied from their respective air accumulators.	In accordance with the Surveillance Frequency Control Program

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**Enclosure 4**

**FNP Technical Specification Bases Marked Up Pages  
(Information Only)**

## B 3.7 PLANT SYSTEMS

### B 3.7.5 Auxiliary Feedwater (AFW) System

#### BASES

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#### BACKGROUND

The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The turbine-driven and motor-driven AFW pumps take suction through separate and independent suction lines (one for the turbine-driven pump and one shared by both motor-driven pumps) from the condensate storage tank (CST) (LCO 3.7.6, "[Condensate Storage Tank \(CST\)](#)") and pump to the steam generator secondary side via separate and independent lines up to the common connection to the main feedwater (MFW) piping to each steam generator outside containment. The steam generators function as a heat sink for core decay heat. The heat load is dissipated by releasing steam to the atmosphere from the steam generators via the main steam safety valves (MSSVs) (LCO 3.7.1, "[Main Steam Safety Valves \(MSSVs\)](#)") or atmospheric relief valves (ARVs) (LCO 3.7.4, "[Atmospheric Relief Valves \(ARVs\)](#)"). If the main condenser is available, steam may be released via the steam dump valves and recirculated to the CST.

The AFW System consists of two motor driven AFW pumps and one steam turbine driven pump configured into three trains. The pumps are equipped with recirculation lines to prevent pump operation against a closed system. Each motor driven AFW pump is powered from an independent Class 1E power supply and feeds all steam generators through a common header. The steam turbine driven AFW pump receives steam from two main steam lines upstream of the main steam isolation valves. Each of the steam feed lines will supply 100% of the requirements of the turbine driven AFW pump. The turbine driven AFW pump supplies a common header capable of feeding all steam generators via DC solenoid air operated control valves actuated by the Engineered Safety Feature Actuation System (ESFAS). Thus, the requirement for diversity in motive power sources for the AFW System is met.

The AFW System is capable of supplying feedwater to the steam generators during normal unit startup, shutdown, and hot standby conditions.

One pump at full flow is sufficient to remove decay heat and cool the unit (normal cooldown) to residual heat removal (RHR) entry conditions.

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## BASES

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### LCO (continued)

generators are OPERABLE. This requires that the two motor-driven AFW pump trains be OPERABLE with one shared flow path, each supplying AFW to all steam generators. In addition, the turbine driven AFW pump train is required to be OPERABLE with redundant steam supplies from each of two main steam lines upstream of the MSIVs, and shall be capable of supplying AFW to any of the steam generators via its associated flow path. The control room manual actuation switches for each AFW pump shall also be OPERABLE. The piping, valves, instrumentation, and controls in the required flow paths also are required to be OPERABLE. A flow path is operable when it is capable of supporting the required AFW flow.

### APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE in the event that it is called upon to function when the MFW is lost. In addition, the AFW System is required to supply enough makeup water to replace the steam generator secondary inventory, lost as the unit cools to MODE 4 conditions.

In MODE 4 the AFW System may be used for heat removal via the steam generators. However, the OPERABILITY of the AFW system in MODE 4 is not assumed in the safety analysis and this LCO does not require the AFW system OPERABLE in MODE 4.

In MODE 5 or 6, the steam generators are not normally used for heat removal, and the AFW System is not required.

### ACTIONS

A Note prohibits the application of LCO 3.0.4b to an inoperable AFW train. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an AFW train inoperable and the provisions of LCO 3.0.4b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

#### A.1

If ~~one of the two steam supplies to~~ the turbine driven AFW train is inoperable due to one inoperable steam supply, or if turbine driven pump is inoperable for any reason while in MODE 3 immediately following refueling, action must be taken to restore the inoperable equipment to an OPERABLE status within 7 days. The 7 day Completion Time is reasonable, based on the following reasons:

(continued)

## BASES

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### ACTIONS

#### A.1 (continued)

- a. For the inoperability of ~~a steam supply to~~ the turbine driven AFW pump due to one inoperable steam supply, the 7 day Completion time is reasonable since there is a redundant steam supply line for the turbine driven pump and the turbine driven train is still capable of performing its specified function for most postulated events.
- b. For the inoperability of a turbine driven AFW pump while in MODE 3 immediately subsequent to a refueling, the 7 day Completion time is reasonable due to the minimal decay heat levels in this situation.
- c. For both the inoperability of ~~a steam supply line to~~ the turbine driven pump due to one inoperable steam supply and an inoperable turbine driven AFW pump while in MODE 3 immediately following a refueling, the 7 day Completion time is reasonable due to the availability of redundant OPERABLE motor driven AFW pumps; and due to the low probability of an event requiring the use of the turbine driven AFW pump.

Condition A is modified by a Note which limits the applicability of the Condition for an inoperable turbine driven AFW pump in MODE 3 to when the unit has not entered MODE 2 following a refueling. Condition A allows one AFW train to be inoperable for 7 days vice the 72 hour Completion Time in Condition B. This longer Completion Time is based on the reduced decay heat following refueling and prior to the reactor being critical.

#### B.1

With one of the required AFW trains (pump or flow path) inoperable for reasons other than Condition A, action must be taken to restore OPERABLE status within 72 hours. A flow path is inoperable if it is blocked such that the required AFW flow cannot be delivered. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the AFW System, the time needed for repairs, and the low probability of a DBA occurring during this time period.

## BASES

### ACTIONS (continued)

#### C.1 and C.2

With one of the required motor driven AFW trains (pump or flow path) inoperable and the turbine driven AFW train inoperable due to one inoperable steam supply, action must be taken to restore the affected equipment to OPERABLE status within 24 hours. Assuming no single active failures when in this condition, the accident (a FLB or MSLB) could result in the loss of the remaining steam supply to the turbine driven AFW pump due to the faulted SG. In this condition, the AFW system may no longer be able to meet the required flow to the SGs assumed in the safety analysis due to the analysis requiring flow from two AFW pumps.

The 24 hour Completion Time is reasonable based on the remaining OPERABLE steam supply to the turbine driven AFW pump, the availability of the remaining OPERABLE motor driven AFW pump, and the low probability of an event occurring that would require the inoperable steam supply to be available for the turbine driven AFW pump

#### D.1 and D.2

When Required Action A.1, ~~or~~ B.1, C.1, or C.2 cannot be completed within the required Completion Time, or if two AFW trains are inoperable for reasons other than Condition C, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

In MODE 4, AFW is not required since the RHR system is available.

#### ED.1

If all three AFW trains are inoperable, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with nonsafety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status.

Required Action ~~ED~~.1 is modified by a Note indicating that all required MODE changes ~~or power reductions~~ are suspended until one AFW train is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition.

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SURVEILLANCE  
REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AFW System water and steam supply flow paths provides assurance that the proper flow paths will exist for AFW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

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