

Pre-Submittal Meeting with NRC

Surry License Amendment Request (LAR)

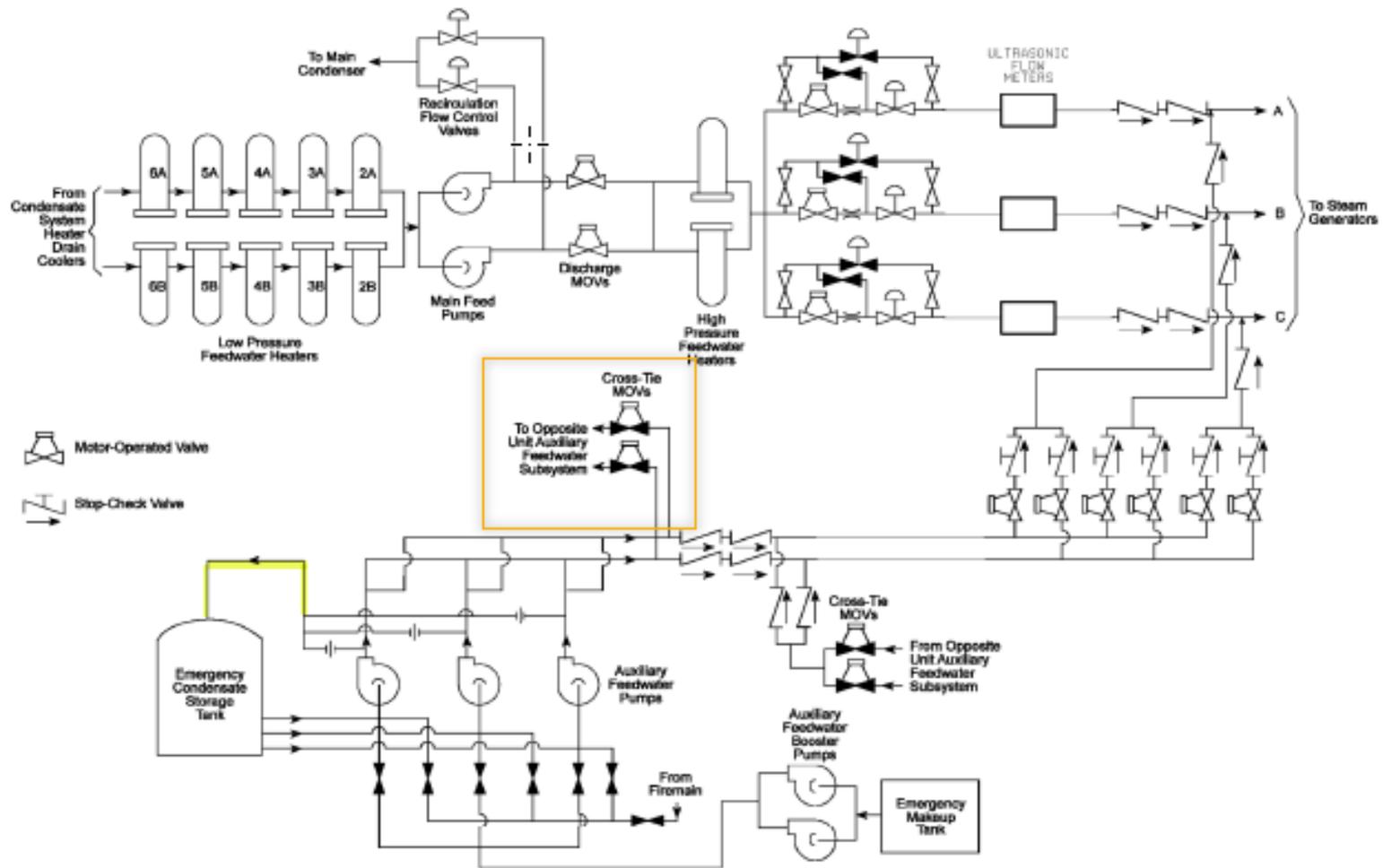
Addition of 10-Day Allowed Outage Time for Auxiliary Feedwater Cross-Connect Capability to Perform Maintenance with Three Inoperable AFW Pumps

April 13, 2022

Agenda

- **Introduction/Opening Remarks**
- **Auxiliary Feedwater System Design Overview**
- **License Amendment Request Overview – Additional 10-Day AOT for AFW Cross-connect Capability w/three inoperable AFW pumps**
 - Need for 10-Day AFW Cross-connect AOT
 - Technical Specifications (TS) Requirements
 - Proposed TS Change
 - Risk Assessment
 - Compensatory measures required during 10-Day AOT
- **Schedule**
- **Conclusion**
- **Discussion**

AFW System Design Overview

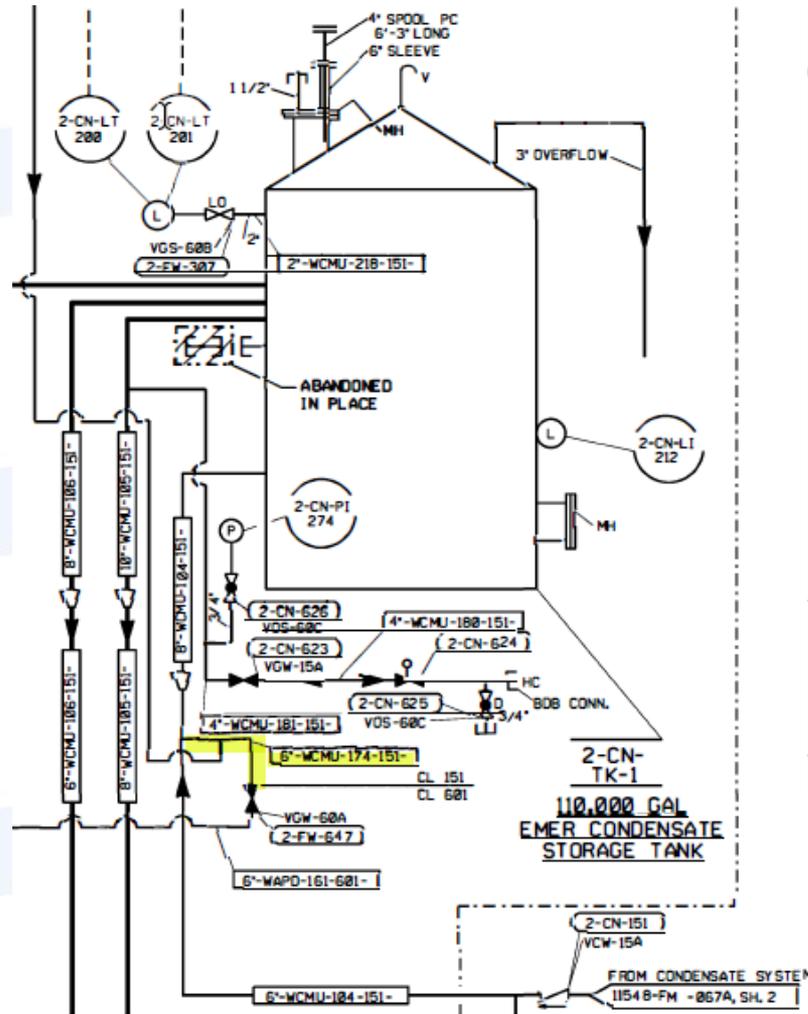


License Amendment Request Submittal Overview

- **Need for 10-Day AOT for AFW Cross-connect Capability**

- All three unit-specific AFW pumps are required to be operable to supply the opposite unit's AFW system via a cross-connect if required (e.g., a total loss of AFW on the opposite unit due to a fire or main steam line break in the Main Steam Valve House)
- A 72- hour TS AOT is permitted for opposite unit AFW cross-connect capability
- Unit 2 AFW full flow recirculation piping has two identified leaks that have been temporarily repaired in accordance with ASME Code Case N-513, Rev. 3
- The piping must be permanently repaired during the Surry Unit 2 2023 spring Refueling Outage (RFO)
- The Unit 2 AFW full flow recirculation piping is common to all three AFW pumps; consequently, the pipe replacement work will result in the inoperability of all three Unit 2 AFW pumps, which results in the inoperability of the opposite unit AFW cross-connect supply to Unit 1
- The repair schedule to repair/replace the affected AFW pipe indicates it will take 8 days, which far exceeds the 72-hour AOT for opposite unit cross-connect capability

AFW System Pipe Replacement



License Amendment Request Submittal Overview

- **Need for 10-Day AOT for AFW Cross-connect Capability**
 - Therefore, an additional, 10-day AOT is required to support the replacement of the Unit 2 common AFW full flow recirculation piping, as well as any similar maintenance that would result in the inoperability of all three AFW pumps and opposite unit cross-connect capability they support (e.g., Emergency Condensate Storage Tank maintenance, repair/replacement of the corresponding Unit 1 AFW piping)

License Amendment Request Submittal Overview (continued)

TS Requirements

TS 3.6.C.4.a requires the operability of the opposite unit's AFW system as follows:

Two of the three auxiliary feedwater pumps and the associated redundant flowpaths on the opposite unit (automatic initiation instrumentation need not be OPERABLE) capable of being used with the opening of the cross-connect.

If TS 3.6.C.4.a cannot be met due to the unavailability of the opposite unit's cross-connect capability, the affected unit must enter TS 3.6.I, which states, in part,

- I. *The requirements of Specification 3.6.C.4 above concerning the opposite unit's auxiliary feedwater pumps; the associated redundant flowpaths, including piping, headers, valves, and control board indication; the cross-connect piping from the opposite unit; and the protected condensate storage tank may be modified to allow the following components to be inoperable, provided immediate attention is directed to making repairs. Automatic initiation instrumentation associated with the opposite unit's auxiliary feedwater pumps need not be OPERABLE.*
 1. *One of the opposite unit's flowpaths or two of the opposite unit's auxiliary feedwater pumps may be inoperable for a period not to exceed 14 days.*
 2. *Both of the opposite unit's flowpaths; the opposite unit's protected condensate storage tank; the cross-connect piping from the opposite unit; or three of the opposite unit's auxiliary feedwater pumps may be inoperable for a period not to exceed 72 hours....*

If the above requirements are not met, be in HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours.

License Amendment Request Submittal Overview (continued)

Proposed TS Change

TS 3.6.I.2 is being revised as follows (change indicated in **bold text**):

*Both of the opposite unit's flowpaths; the opposite unit's protected condensate storage tank; the cross-connect piping from the opposite unit; or three of the opposite unit's auxiliary feedwater pumps may be inoperable for a period not to exceed 72 hours. **For the specific purpose of performing maintenance related to the operability of all three of the opposite unit's auxiliary feedwater pumps, these components may be inoperable for a period not to exceed 10 days.***

License Amendment Request Submittal Overview (continued)

Risk Assessment Results

A risk assessment has been performed for a 10-day AOT for the opposite unit's cross-connect capability due to maintenance that renders all three AFW pumps inoperable. The risk assessment concluded the following:

- The risk associated with a 10-day AOT is acceptably small for both CDF and LERF with considerable margin remaining.
- Both the AFW cross-tie MOVs and check valves are modeled in the internal events PRA, so the risk estimates are precise.
- FLEX strategies are credited in this risk assessment. FLEX is not in the dominant internal events sequences, but it is important for the estimation of fire risk.

License Amendment Request Submittal Overview (continued)

Compensatory Measures While in the 10-Day AOT

- Weather conditions will be monitored and the pipe replacement will not be scheduled if severe weather conditions are anticipated
- The opposite unit's steam-driven AFW pump will be controlled as "Protected Equipment" while in the 10-day AOT
- TRM compensatory actions to address 10 CFR 50.65 (a)(4) fire risk related to the AFW cross tie unavailability, which include periodic walkdowns in relevant fire areas, will be taken
- The AFW BDB/FLEX pump will be pre-staged to provide AFW defense-in-depth comparable to the AFW cross-tie during the 10-day AOT

Schedule

Action	Target Date
Facility Safety Review Committee Approval of LAR	April 28, 2022
Submit LAR to NRC	May 5, 2022
NRC Approval Requested	April 15, 2023
Implement License Amendments	Prior to Unit 2 Spring 2023 RFO

Conclusions

- Repair/replacement of the Unit 2 common AFW full flow recirculation piping requires eight days to complete
- Tagging out the Unit 2 common AFW full flow recirculation piping renders all three Unit 2 AFW pumps inoperable, which requires the opposite unit (i.e., Unit 1) to enter a 72-hour AOT TS clock due to the inoperability of both AFW cross-connect trains
- The addition of a 10-day AOT for the inoperability of the opposite unit AFW cross-connect trains due to three inoperable AFW pumps allows sufficient time to complete the repair/replacement of the Unit 2 common AFW full flow recirculation piping, as well as the future repair of the corresponding Unit 1 AFW piping as required, without requiring a dual unit outage
- The risk assessment performed for the 10-day AOT concluded the risk associated with making the proposed TS change is acceptably low for CDF and LERF
- Compensatory measures will be put in place whenever the 10-day AOT is entered

Surry Units 1 and 2 LAR to Add 10-Day AOT for Opposite Unit Cross-Connect Capability

Discussion