

Control of AFW JITT
(November 2002)

Objectives:

Acquire a thorough understanding of current operational concerns associated with our AFW system.

Demonstrate the ability to control AFW under a variety of normal operating and transient situations in a manner that ensures the AFW pumps are protected.

Discussion:

It is an absolute necessity to prevent operation of an AFW pump below its required minimum flow:

- - Motor Driven AFPs 50 gpm
- - Steam Driven AFPs 75 gpm

For abnormal and emergency procedures, we must operate the AFW system as though the recirculation valve is failed shut at all times.

For normal operating procedures and testing, the use of a level 3 dedicated operator must be approached with the highest level of briefing and preparation. The CO and AO have to be in communication PRIOR TO making any flow adjustments. The communications protocol expected to occur when AFW recirculation flow is below the minimum limits must be immediate, clear, concise, and evoke a pre-planned response to protect the pump if the low recirculation flow is not expected as a result of intentionally raising the AFW flowrate.

Failure to operate the AFW system in this manner could introduce considerable nuclear safety concerns.

Procedures:

Review procedure changes to OI-62A, Motor Driven Auxiliary Feedwater System (P-38A & P-38B)

- Reinforce recirculation design flow should be between 70 and 80 gpm (step 3.21)
- Reinforce assignment of a dedicated operator (e.g., step 7.3.1)
- Reinforce securing the dedicated operator AFTER pump is stopped (e.g., step 7.3.7)
- Reinforce Attachment B aspects to continuously monitor flow and immediately inform the control room when flow is less than 50 gpm. It is imperative to secure the pump when flow is less than 50 gpm.
- Reinforce AFW Pre-Job Brief package and contents

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Review procedure changes to OI-62B, Turbine Driven Auxiliary Feedwater System (P-29)

- Reinforce that it is desirable to maintain 120 gpm flow to increase pump life (step 3.15)
- Reinforce assignment of a dedicated operator (e.g., step 5.6.7)
- Reinforce securing the dedicated operator AFTER pump is stopped (e.g., step 5.6.19)
- Reinforce Attachment A aspects to continuously monitor flow and immediately inform the control room when flow is less than 75 gpm. It is imperative to secure the pump when flow is less than 75 gpm.

Review procedure changes to IT-08A, Cold Start of Turbine Driven Auxiliary Feed Pump and Valve Test (Quarterly) and IT-10, Test of Electrically Driven Auxiliary Feed Pumps and Valves (Quarterly)

- Reinforce IT-08A Precaution and Limitation 3.8 and Caution prior to step 5.24
- Reinforce IT-10 Precaution and Limitation 3.10 and Caution prior to step 5.16

Review Abnormal and Emergency procedure foldout page change

- Emphasize the changes affect both units procedures
- Emphasize the changes affect selected AOPs, EOPs, ECAs, and CSPs
- Emphasize the wording is consistent, although some are handwritten and some are typed

Review other significant items:

- Meter scales for AFW flow have been marked with red tape to reinforce the critical minimum flow zone
- Review motor driven auxiliary feedwater pump starting duties
 - o ORT-3C
 - o These starting duties are published motor starting duty limits for normal operations and ensure long life of the motor
 - o In an emergency situation, we would start the pumps as necessary to support our procedures
- Steps could be encountered where minimum flow requirement knowledge will alter how the action is completed
 - o EOP-0 foldout page ruptured generator isolation criteria (affected MDAFP will need to be secured prior to isolating flow, TDAFP flow will need to be maintained > 75 gpm)
 - o EOP-0 foldout page faulted SG isolation criteria (same concern)
 - o Temperature control steps to minimize feed flow for cooldown concerns (need to maintain minimum flow requirements or secure the affected pump)

- o Multiple faulted SGs (requirement is to maintain at least 50 gpm to each SG and we will need to also factor in minimum pump flow concerns and either maintain them or secure the affected pump)
- Turnover of watch stations during EOP situations will require on coming and off going operators to review current AFW feed requirements, recent adjustments, feed strategy, pump start/stop frequency, etc.

Simulator Operating Guidelines For Conducting AFW JITT

INITIALIZE the simulator and LOAD IC 21 :

VERIFY the simulator is ready for the JITT demonstration.

ENTER the simulator commands and set to enable as follows:

Event 1: Demonstration of throttling AFW flow per EOP fold out page guidance.					
Initiation Cue	Action or Component Description	Action Tagname	Malf. Value	Ramp Time	Delay Time
PLI	Unit 1 main transformer lock out	MAL1GEN001A	-	-	-

Expected actions:

- Enter EOP-0 and complete the immediate action steps.
- Transition to EOP-0.1, and throttle AFW flow at Step 1 to control temperature.
- At Step 3, secure AFW flow and maintain steam generator levels using the main feed water pumps.

Event 2: AFW isolation per EOP fold out page guidance.					
Initiation Cue	Action or Component Description	Action Tagname	Malf. Value	Ramp Time	Delay Time
PLI	Unit 1 'A' SGTR at 400 gpm	MAL1RCS008A	10	-	-

Expected actions:

- Enter EOP-0 and complete the immediate action steps.
- After completion of the IA steps and identifying the ruptured steam generator, isolate AFW flow to the ruptured steam generator using the fold out page guidance.
 - Point to stress is the requirement to secure the AFW pump prior to lowering flow below the minimum required flow.

Event 3: AFW throttling guidance for two faulted Steam Generators.					
NOTE: Place P-38A in Pull Out prior to start of demonstration.					
Initiation Cue	Action or Component Description	Action Tagname	Malf. Value	Ramp Time	Delay Time
PLI	U2 'A' SG MSIV closure	VLV2SGN014	2	-	-
	U2 'A' SG safety valve leakage	VLV2SGN005B	50	-	-
	U2 'B' SG safety valve leakage	VLV2SGN001B	50	-	-

Expected actions:

- Enter EOP-0 and complete the immediate action steps.
- After completion of the IA steps and identifying the faulted steam generators, throttle AFW flow to the faulted steam generators using the background document guidance.
 - NOTE: Stress that with an electric AFW pump OOS, 1(2)P-29 flow CAN NOT be reduced less than 75 gpm. This requirement has a higher priority than EOP/ECA guidance to throttle to 50 gpm per SG.

Event 4: Control of AFW flow during return to service PMT IAW OI-62A					
Initiation Cue	Action or Component Description	Action Tagname	Malf. Value	Ramp Time	Delay Time
PLI	Start P-38A IAW Step 7.3 of OI-62A	-	-	-	-
PLI	Report lowering recirc flow	60 GPM AND LOWERING	-	-	2:00
	Report lowering recirc flow	50 GPM AND LOWERING	-	-	3:00

Expected actions:

- Crew briefs booth operator as if he were performing the actions of the assigned dedicated operator.
- On report of lowering recirculation flow rates from the booth operator, acting as AO, the crew should promptly secure the AFW pump.