

Nov 30 2001
Dec 5

AFW Concerns Briefing

Issue:

The issue of concern is inadvertent destruction of our auxiliary feedwater pumps due to insufficient cooling resulting in a substantial increase to our core damage frequency.

The hypothetical scenario involves a complete loss of offsite power with all equipment functioning as designed. Both units trip and, in addition, we lose instrument air due to loss of all instrument and service air compressors on undervoltage.

The steam driven AFW pump discharge MOVs remain operable as they are DC powered. The electric AFW pump discharge pressure control valves still function as they have nitrogen backup. All mini-recirculation valves will remain shut as they are fail shut AOVs with no backup supplies.

If an operations crew were to fail to recognize this, they could inadvertently throttle back AFW flow to address SG level concerns to a point where the pumps overheat due to low flow. Each electric AFW pump requires a minimum flow of 50 gpm and the steam driven AFW pump requires a minimum flow of 75 gpm to prevent damage.

Actions:

EOP-0 and EOP-0.1 foldout pages have been revised to address this situation.

Temporary information tags containing the pertinent information have been posted at the controls for the associated AFW pump flow control valves.

If minimum flow cannot be maintained without exceeding desired SG level, secure the associated pump(s) and restart later if needed.

There are no cycle limitations on the turbine driven AFW pumps as the governors have been demonstrated stable and reliable on subsequent restart with no need to vent accumulated oil pressure.

Motor driven AFW pumps should not be restarted if warm until either of the following have been met:

- 15 minutes of continuous run since the last start
- 1 hour secured since the last start

Starting duty limitations are not expected to be a factor but are provided because starting and stopping of the electric AFW pumps may become necessary. Excessive starting and stopping may lead to motor overheating and eventual motor failure. The guidance above is based on manufacturer's recommendations for long life and are considered conservative. In no case should start of an AFW pump be delayed if it is the only available source and feedwater is needed to mitigate further consequences of an accident.

Scenario:

Run through complete loss of offsite power through completion of step 6 e. of EOP-0.1.

Review and emphasize above applicable actions.

Review and emphasize use of ACP-22 for recovery of equipment necessary to support plant conditions.

AT/33