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Date: 10/23/2006 10:52:22 AM
Subject: REQUEST FOR ADDITIONAL INFORMATION-TAC NOS. MD0934 AND MD0935

SOUTH TEXAS PROJECT REQUEST FOR AMENDMENTS
PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS FOR
ACCIDENT MONITORING INSTRUMENTATION
TAC NOS. MD0934 AND MD0935

In reviewing the request for amendments dated March 30, 2006, the NRC staff has identified a need for additional information, in order to complete its review. The NRC staff is concerned about the AFW flow instrument, since it appears to not only provide flow indication (which is used frequently in EOPs), but also provides a control function. The NRC staff understands one of the original concerns related to verifying that an AFW pump is started during the loss of normal feed event. But has the following two considerations for that event:

(1) The It would only be an issue during a 7-day period. The staff does not think that the licensee has to address every possibility if the plant is in a shutdown clock, plus perhaps limited risk due to possibility of a LOOP/loss of feed during a 7 day time period. The NRC staff is concerned where only one instrument is inoperable, and there is NO shutdown clock at all.

(2) There are other means besides flow to verify that the third AFW pump has been successfully started - start/stop indicating light, discharge pressure, rising S/G narrow range level.

The other instruments That, Told, S/G wide range level might not be all that vital, assuming the licensee truly provides indication only. As stated in its LAR, these indications may not be used much during the EOPs.

The NRC staff would like the licensee to respond to the following RAN to address the stated concerns. If the licensee would like to receive a formal letter of request for this information, please advise. A letter will be promptly issued. Thank you for your cooperation.

Mohan Thadani

CC: Mazumdar, Subinoy; Muller, David

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AFW FLOW INSTRUMENT CONCERNS

Question #1: How does an INOPERABLE AFW flow instrument channel affect the OPERABILITY and function of its associated AFW train? Per the South Texas license amendment request, it appears that an INOPERABLE AFW flow instrument channel may prevent the associated AFW train from automatically delivering a pre-set range of feed flow to its associated S/G, since the AFW regulator valve is controlled by QPDS using AFW flow. Is this correct?

For all questions, consider a range of malfunctions which would cause an AFW flow instrument to be considered INOPERABLE, to include: instrument failed high, instrument failed low, instrument failed at an intermediate AFW flow, and no signal from the AFW flow instrument to QPDS.

Question #1.a:Does an INOPERABLE AFW flow instrument channel cause the associated AFW train to be INOPERABLE?

Question #1.b:Isn't it a part of the current design basis for an AFW train to AUTOMATICALLY deliver a pre-set range of feed flow given a valid AFW actuation signal? (e.g., SI signal, LOOP with S/G low-low water level). How does an INOPERABLE AFW flow instrument channel affect this design basis?

Question #1.c:For accidents where AFW actuation occurs (i.e., many events from the South Texas FSAR chapter 15 accident analysis), a value of AFW flow had to be assumed. Per the proposed new TS action statements, one AFW flow channel instrument could be INOPERABLE indefinitely. How does an INOPERABLE AFW flow instrument affect the AFW flow(s) assumed in the chapter 15 accident analysis?

Example: Consider a steam generator tube rupture accident on say S/G A, as described in STP's FSAR. Add in a failed low AFW flow instrument for S/G A, which would be allowed indefinitely per the proposed TS change. Without operator action, will the AFW flow regulator valve to S/G A be open too far (due to the failed low AFW flow instrument) and perhaps lead to overfill on S/G A?

Question #2: When an AFW flow instrument channel becomes INOPERABLE, it appears that operators can take manual action to control the associated AFW regulator valve. Is this correct?

Question #2.a:Is this what operators do when an AFW flow channel instrument becomes INOPERABLE? If so, answer these associated questions:

Question #2.a.1:How do operators know that an AFW flow channel instrument has become inoperable with AFW not running? Consider an AFW flow instrument failed high, failed low, instrument failed at an intermediate AFW

flow, and no signal from the AFW flow instrument to QPDS. How would operators be alerted to these conditions? Alarms? Flow meter indications?

Question #2.b.1:Is taking manual control required by plant procedures? If so, please explain the procedure(s) entered (alarm procedure(s), operating/abnormal procedure(s)) and provide the procedures to the NRC.

Question #2.b.2:If taking manual control is an action required by procedures, in what amount of time after an AFW flow instrument is determined to be INOPERABLE will this action be taken?

Question #2.b:Does taking manual control of the AFW regulator valve restore that AFW train to OPERABLE?

Question #2.c:Does taking manual control of the AFW regulator valve allow that train of AFW to return to being able to perform its design function of delivering a pre-set range of feed flow given a valid AFW actuation signal?

Question #2.d:Consider an INOPERABLE AFW flow channel instrument, with the associated AFW regulator valve in manual. What would be the response of that AFW train to a LOOP (and associated loss of normal feedwater)? Compare this to the FSAR analysis, where that train's AFW pump will start on the LOOP, but go into recirculation until a valid S/G low-low level signal is received. Please justify any differences in AFW response.

OTHER CONCERNS

Question #3: Please provide a listing for how the plant uses/where the output signal goes for each of the instruments considered in the proposed TS change:

RCS Loop Thot wide range
RCS Loop Tcold wide range
S/G water level wide range
AFW flow

Use plant drawings as necessary, and include any alarms, feeds to other instruments, interlocks, and displays where the outputs of the instruments are utilized. (The NRC would like to verify that Thot, Tcold, S/G level are primarily for indication ONLY, and that only AFW flow serves another purpose (regulator valve control).)

Question #4: Although in the LAR for STP it was stated how these instruments are used during an accident (e.g., EOP implementation, emergency action level classification), the NRC would like to conduct an independently verification. Would it be possible for STP to provide their entire EOP network to the NRC on a CD-rom? By entire EOP network, the NRC means:

1. The "baseline" EOPs (e.g., E-0, E-1, E-2, E-3).
2. Critical safety function status trees.
3. Functional restoration procedures.

4. Emergency contingency procedures (i.e., loss of all AC power, loss of ECCS recirculation, uncontrolled depressurization of all steam generators, LOCA outside containment, steam generator tube rupture without pressurizer pressure control, etc.)
4. Event specific procedures (i.e., reactor trip response, re-diagnosis, natural circulation cooldown, SI termination, post LOCA cooldown and depressurization, transfer to cold leg recirculation, etc.).
5. Emergency action level classification procedure which includes what plant data are used and how to classify events.

OTHER EVENT-SPECIFIC CONCERNS

Question #5: For a Loss of Normal Feedwater flow event, as described in section 15.2.7 of the licensee's UFSAR, a LOOP is assumed with a failure of ESFAS train A to actuate. This results in only the B and C motor-driven AFW pumps running, with operator action required within 15 minutes to manually start either the A motor-driven AFW pump or the D steam-driven AFW pump. Explain how the operator action to manually start these AFW pumps would be affected assuming that the associated AFW flow indicator was INOPERABLE. Specifically:

Question #5.a:Do you believe operators can successfully manually start an AFW pump without flow indication?

Question #5.b:How will operators verify that they have successfully started an AFW pump without flow indication?

Question #5.c:Is there adequate guidance in plant procedures to ensure that operators can manually start an AFW pump without flow indication?

Question #5.d:Are operators adequately trained such that they will be able to manually start an AFW pump without flow indication?

Question #5.c:Will operators be able to meet the 15-minute required action time, assuming one INOPERABLE AFW flow indicator (i.e., AFW flow indicator A is INOPERABLE, and operators choose to start the A AFW pump)

Question #5.d:Will operators be able to meet the 15-minute required action time, assuming two INOPERABLE AFW flow indicators (AFW flow indicators A and D INOPERABLE).

Question #6: Consider again a steam generator tube rupture accident, assuming the ruptured tube occurs on S/G A. Also assume that the AFW flow indicator for train A is failed high and INOPERABLE, such that the AFW regulator valve for train A will be more closed due to the failed instrument. Under these circumstances, AFW flow to the A S/G will be less than the AFW flow to the B, C, and D S/Gs. Could this lower AFW flow to the A S/G perhaps mask the A S/G level increasing from the tube rupture, when compared to the B, C, and D S/Gs which have higher AFW flow?