

January 13, 2010

NOTE TO: File

FROM: Brian K. Harris, Project Manager */RA/*
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

SUBJECT: DOCKETING OF OCTOBER 2, 2009 U.S. NUCLEAR REGULATORY
COMMISSION TELECONFERENCE NOTES PERTAINING TO THE LICENSE
RENEWAL OF THE DUANE ARNOLD ENERGY CENTER

This Note to File makes the following enclosed correspondence publicly available:

- **U.S. Nuclear Regulatory Commission License Renewal Teleconference –
October 2, 2009**

Enclosure:
As stated

CONTACT: Brian K. Harris, NRR/DLR
301-415-2277

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Duane Arnold Energy Center

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Summary of Discussion with U.S. Nuclear Regulatory Commission

Date: October 2, 2009

Time: 1:00pm CST

Location: Telephone Conference

Participants:

U.S. Nuclear Regulatory Commission (NRC)

Brian Harris
Jason Draper

Duane Arnold Energy Center (DAEC)

Curt Bock
Clara Rushworth
Mike Fairchild

Topic: Review comments on license renewal application (LRA)

References: As noted in summary

Main Points of Discussion:

The Reactor Systems Branch of the Division of Safety Systems has reviewed Sections 2.3.1.1, 2.3.1.2, 2.3.2.1, 2.3.2.2, 2.3.2.4, 2.3.2.5, 2.3.3.7, 2.3.3.24, and 2.3.3.30 of the DAEC LRA, as well as NUREG-1800, NUREG-1801, DAEC Updated Final Safety Analysis Report (UFSAR), and the scoping drawings. Please clarify whether the listed components of the following systems are within the scope of license renewal in accordance with Title 10 of the *Code of Federal Regulations* Part 54.4(a) (10 CFR 54.4(a)), and subject to aging management review (AMR) in accordance with 10 CFR 54.21(a)(1).

Nuclear Boiler (Section 2.3.1.1)

- Steam Separator – Per BWRVIP-06-A, Section 3.2.2, Failure Consequences - The steam separator's sole function is to remove moisture from steam in order to minimize erosion of piping and the turbine. It does not perform any safety-related function, cannot fail in manner that would affect safety related equipment nor is it required to support any regulated event. The Steam Separator is not in the scope of license renewal and is not subject to AMR.
- Top Head Nozzles – There are three nozzles located on the top head, one for the head vent and two spare nozzles. There is also a nozzle on the reactor pressure vessel (RPV) head flange which is for seal leak of detection instrumentation. All of these nozzles are part of the primary coolant boundary and are safety-related. All four of these nozzles are in scope for license renewal and are subject to AMR. The nozzles are listed in LRA Table 2.3.1-1 as Nozzle-High pressure/low pressure seal leak detection, Nozzle-Spare and Nozzle-Vent. The RPV Head Nozzles are listed in LRA Table 3.1.2-1 as component types Nozzle-High pressure/low pressure seal leak detection, Nozzle-Spare and Nozzle-Vent.

ENCLOSURE

- Jet Pump Castings – The jet pump castings are in the scope of license renewal and subject to AMR. They are listed as 1R221C in LRSP 62.00 and as Jet Pump Assembly - Collar, Flare in LRA Table 2.3.1-1
- Jet Pump Sensing Lines – Per BWRVIP-06-A, Section 2.6.2, Safety Consequences, - Jet Pump Sensing Line and Support Bracket. The sensing lines internal to the RPV are supported off the jet pump diffusers by welded struts. Failure of a strut would alter the sensing line frequency and potentially result in fatigue cracking. The failure of a sensing line at any location within the RPV would be detectable during jet pump surveillance done at least daily. The plant could be brought to a safe shutdown condition or, if it is clear to operators that the jet pump performance change was due to sensing line failure, the plant could continue to operate with a disabled sensing line with no adverse safety consequences. Failure of a sensing line does not affect the pressure measurement taken for post accident water level monitoring. The jet pump sensing lines internal to the RPV are not safety-related or relied upon for any regulated event nor can they leak or spray on safety-related equipment so they have no license renewal intended function. The portion of the jet pump sensing lines outside the vessel are safety-related equipment since they form a reactor coolant pressure boundary and are in scope for 10 CFR 54.4 (a)(1). These jet pump sensing lines external to the RPV are listed in LRA Table 2.3.1-2 within the component type “Piping.” The jet pump sensing lines external to the RPV are listed in Table 3.1.2-2 within the component group “Pipe class I, pipe fittings, tubing with a material of stainless steel in an air indoor uncontrolled external environment and reactor coolant internal environment.” They are also listed in component group “Pipe, pipe fittings, hoses, tubes, and rupture discs” with a stainless steel material in an air indoor uncontrolled external environment and either treated water or treated water >60°C internal environment.

High Pressure Coolant Injection System (Section 2.3.2.2)

- Condensate Storage Tank (CST) – CSTs are in the scope license renewal for 10 CFR 54.4 (a)(3) in that they are credited with maintaining a supply of water for the Reactor Core Isolation System and High Pressure Coolant Injection System during Station Black Out and are subject to AMR. They are included as the component type “Pressure Vessel” in LRA Table 2.3.4-1 and as component type “Accumulator, pulsation damper, low pressure tank” in LRA Table 3.4.2-1.
- High-Pressure Coolant Injection (HPCI) Vacuum Tank Strainer – The HPCI vacuum tank strainer is an integral part of the HPCI Barometric Condenser 1E202 which is not a safety-related component. The strainer is internal to the tank and does not have a capability to leak or spray on adjacent safety-related equipment. The strainer is not in the scope of license renewal and is not subject to AMR. The Barometric Condenser (1E202) that contains the strainer is in scope for 10 CFR 54.4 (a) (2).

Reactor Core Isolation Coolant Injection System (Section 2.3.2.4)

- Reactor Core Isolation Coolant Injection (RCIC) Turbine Exhaust Pressure Discs – The RCIC turbine exhaust pressure discs are within the scope of license renewal in that they are safety-related; however they are not subject to AMR because they are replaced on a five year-interval (Preplanned tasks Z05079 & Z05080) and have been screened out as a periodically replaced consumable.

Residual Heat Removal System (Section 2.3.2.4)

- Suppression Pool – The suppression pool is in the scope of license renewal and is subject to AMR. It is listed as a structural component in LRA Table 2.4-7 as “Torus carbon steel air-indoor uncontrolled” and “Torus carbon structural steel in treated water”. It is identified in LRA Table 3.5.1 as Item 3.5.1-5 and is listed as the component “Steel Elements: Drywell, Torus, Drywell Head.....”
- Containment Spray Flow Orifice – The DAEC Containment Spray Subsystem of residual heat removal (RHR) is not required for reactor safety but is manually initiated and controlled by operator action to limit containment temperatures within design Post – loss-of-coolant accident as described in DAEC UFSAR Section 6.2.2.2.2. Since the flow is manually operator initiated and controlled the system has no flow orifices and flow is controlled by manually throttling the containment spray flow control valve.
- Containment Spray Nozzles – Per DAEC UFSAR Section 6.2.2.2.2, “Containment spray operation is not required from the standpoint of reactor safety.” Furthermore, from UFSAR Section 6.2.2.2.2, “Although spray is not required for plant safety since stress analysis shows ample design margin, sprays would be used to limit temperature to 281F.” Lastly, from UFSAR Section 6.2.2.3, “The containment spray system is a manually initiated system that is not required from the standpoint of nuclear safety. Additionally the containment spray nozzles have no pressure boundary function and normally have a containment atmosphere interior environment so they do not perform a license renewal function for 10 CFR 54.4 (a)(1), (a)(2) or (a)(3) and are not subject to AMR.”
- RHR Heat Exchanger Tubes – The RHR heat exchanger tubes are safety-related and are in the scope of license renewal and subject to AMR. The RHR Heat Exchanger Tubes are listed in LRA Table 2.3.2-5 under the component type of “Heat Exchanger”. They are listed in LRA Table 3.2.2-5 in the lines with a component type of “Heat exchanger, condenser, cooler fan coil” with an intended function of “Heat Transfer”, a material of “Stainless steel” and an internal environment of “Raw Water” and an external environment of “Treated Water.”

Reactor Water Cleanup System (Section 2.3.3.24)

- Reactor Water Cleanup System (RWCU) Non-Regenerative Heat Exchanger Tubes – The RWCU non-regenerative heat exchanger (NRHX) Tubes are not in the scope of license renewal or subject to AMR because they are not safety-related or relied on for any regulated events. The NRHX tubes are completely contained within the RWCU Non Regenerative Heat Exchanger Shell so they do not have the capability to spatially affect adjacent safety-related equipment. The NRHX shell is in scope and subject to AMR for 10 CFR 54.4 (a)(2) since it could leak or spray and spatially affect adjacent safety-related equipment.
- RWCU Recirculation Pump Cooler Tubes – The RWCU recirculation pump cooler tubes are not in the scope of license renewal or subject to AMR because they are not safety-related or relied on for any regulated events. The RWCU recirculation pump cooler tubes are completely contained within the RWCU recirculation pump cooler shells so they do not have the capability to spatially affect adjacent safety-related equipment. The RWCU recirculation pump cooler shells are in scope and subject to AMR for 10 CFR 54.4 (a)(2) since they could leak or spray and spatially affect adjacent safety-related equipment.

Standby Liquid Control System (Section 2.3.3.30)

- Standby Liquid Control (SLC) Storage Tank – The SLC storage tank is safety-related and is in the scope of license renewal and is subject to AMR. The SLC storage tank is identified in LRA Table 2.3.3-30 as a “Pressure Vessel” component. The SLC storage tank is identified in LRA Table 3.3.2-30 as an “Accumulator, pulsation damper, low pressure tank” component grouping and is contained on the line for a stainless steel material with a air indoor uncontrolled external environment and the line for stainless steel material with a sodium pentaborate solution internal environment.
- SLC Storage Tank Heaters – The SLC storage tank contains two sets of heaters. One of them is a mixing heater used only when additional sodium pentaborate and water is added to increase the concentration and level in the tank. This heater is not safety-related or relied on for any regulated events. The SLC mixing heater is not in the scope of license renewal and is not subject to AMR. The normal operation heater is safety-related and is in the scope of license renewal; however it was screened out as an active component and is not subject to AMR. The heaters are contained within the SLC storage tank and do not form a pressure boundary that is safety-related nor can they leak or spray on adjacent safety-related equipment so they do not have an 10 CFR 54.4 (a)(2) function.
- Standby Storage Tank Sparger – The SLC tank sparger is an instrument air supplied sparger that is only used to mix the pentaborate solution for sampling and chemical addition. It does not provide any safety-related function as described in the UFSAR nor is it relied on for any regulated events. The sparger is totally contained within the SLC storage tank and cannot leak or spray on adjacent safety-related equipment. The SLC tank sparger is not in the scope of license renewal and is not subject to AMR.

- Stainless Steel Bolting in HPCI/RCIC – Stainless steel bolting in the systems is primarily limited to active components. Subsequent to the conference call, DAEC identified that there are two ¾” vent valves, V23-0078 and V23-0079, which were identified in the HPCI system as being stainless steel with stainless steel bolting. The valve bodies are in scope but the stainless steel bolting was overlooked. A commodity to include stainless steel fasteners will be added to the HPCI system table (Table 3.2.2-2). There are no aging effects for this commodity since stainless steel in air – indoor uncontrolled has no aging effects. There are no stainless steel bolts in the RCIC system.

Actions:

DAEC: Revise LRA Table 3.2.2-2 (LRA Change form 1196)

NRC: None

Summary: N/A

Disposition of Summary of Discussion with NRC:

- | | | |
|----|---|-------------|
| 1) | Summary for internal use | _____ |
| 2) | Meeting summary with copy provided to NRC | _____X_____ |
| 3) | Docketed letter related to meeting | _____ |
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