NRR-PMDAPEm Resource

From: Dave Lochbaum [DLochbaum@ucsusa.org]
Sent: Friday, August 10, 2012 9:11 AM
To: Feintuch, Karl
Cc: Leeds, Eric; Witte, Ulrich; Casto, Chuck
Subject: Proposed refueling plan at Duane Arnold

Hello Mr. Feintuch:

Ulrich Witte, a colleague and friend, brought to my attention the correspondence exchange between the Duane Arnold licensee and the NRC (e.g., ADAMS Accession Nos. ML121000327, ML12179A299, ML12209A420, ML12122A212, and ML12199A130).

The licensee wants to apply a protective coating to the inside surface of the torus at Duane Arnold during the upcoming refueling outage 23 (RFO 23). Doing so requires draining water from the torus and preventing water entering the torus during the work activities.

The licensee proposes to rely on one train of the core spray system to satisfy reactor core cooling regulatory requirements during this work. But core spray normally takes suction from the torus and its minimum flow recirculation line returns water to the torus. The licensee proposes to realign this core spray subsystem to take suction from the condensate storage tank and to disable the minimum flow recirculation function.

In reviewing the available materials regarding this proposal, I was unable to find answers to the following questions:

1) Why doesn't the licensee offload the entire reactor core to the spent fuel pool prior to and throughout the torus activities? Doing so would eliminate the need for the core spray subsystem. Has this licensee placed schedule (i.e., shorter refueling outages) ahead of safety?

2) Has the seismic risk from core spray using suction from the condensate storage tank vice the torus been evaluated? I have never worked at Duane Arnold, but I've worked at several boiling water reactors similar in design to it. The condensate storage tank - the normal suction for the high pressure coolant injection and reactor core isolation cooling systems and alternate suction for the core spray and residual heat removal systems - is typically not credited in safety studies because of the challenge in seismically qualifying the condensate storage tank and its associated piping. Here, the licensee proposes to swap the torus - a more seismically robust source - to the condensate storage tank - a more seismically fragile source - without apparently justifying that margin reduction.

3) What about reactor vessel pressurization events during the torus work? The licensee provided incomplete justification for its proposal to eliminate the minimum flow recirculation function for the core spray pump during the proposed torus outage. The licensee's justification argued that reactor vessel pressure is always below the core spray injection valve opening pressure setpoint duirng Modes 4 and 5, thus providing complete assurance that this valve will open in time to prevent damage to the core spray pump from operation at no or low flow conditions. But that logic is simply not reflected in the BWR/4 Standard Technical Specifications (STS) and their bases issued by the NRC staff in April 2012 (ML12104A192 and ML12104A193). Minimum flow recirculation is required for the core spray pumps in Modes 4 and 5 in the STS. The flaw in the licensee's logic is that a loss of shutdown cooling could cause the reactor vessel pressure to increase above the opening pressure setpoint for the core spray injection valve. Last year's tragedy at Fukushima vividly illustrated the consequences from reactor vessel pressure being higher than the discharge pressure of makeup sources. The proposal by the licensee sets the stage for replicating elements of that disaster: (1) shutdown cooling is lost, (2)

the ensuing heatup of the reactor vessel water increases the reactor vessel pressure above the injection valve's opening setpoint, and (3) the solitary core spray pump dead-heads until it is irrevocably damaged.

UCS urges the NRC staff not to approve this amendment request until all applicable questions have been properly answered.

Thanks,
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