10/18/02 Gave to Barry.

Exelon

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Please share this with Barry. If a discussion is needed, we will be pleased to support a call.

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Enclosure 2

Open Item 4.5.2-1: The staff is concerned that multiple failures of top guide beams are possible when the threshold fluence for IASCC is exceeded. According to BWRVIP-26, multiple cracks have been observed in top guide beams at Oyster Creek. In addition, baffle-former bolts on PWRs that exceeded the threshold fluence have had multiple failures. In order to exclude the top guide beam from inspection when its fluence exceeds the threshold value, the applicant must demonstrate that failures of multiple beams (all beams that exceed the threshold fluence) will not impact the safe shutdown of the reactor during normal, upset, emergency, and faulted conditions. If this can not be demonstrated, the applicant should propose an aging management program (AMP) for these components which contain the elements in Branch Technical Position RLSB-1 of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," July 2001.

Response to Open item 4.5.2-1: In developing inspection recommendations for the top guide (and all other internal components), the BWRVIP first evaluated whether the failure of a particular location (e.g., weld, bolted connection, etc.) could cause degradation in plant safety. If the failure affects the ability of the plant to safely shutdown, an inspection of that location is required. If there are no failure consequences, then no inspections are required for that component. This strategy is adequate to ensure plant safety and has been accepted by the staff for core internals evaluated by BWRVIP.

BWRVIP-06, "Safety Assessment of BWR Reactor Internals", section 2.1.3.2 provides the following information for the top guide locations:

Location 1 – Grid beam-to-beam crevice slot
Location 4 – Grid beam to rim top and bottom cover plate pins
Location 6 – Fuel guard welds and bolting

No safety consequences result from failures at location 1, 4, and 6. Grid beams are inter-tied in such a manner that a large number of complete separations by cracking would need to be postulated before control rod insertion would be hindered. Crack indications have only been observed at one domestic reactor (Oyster Creek). However, failures at creviced connections at beam intersections and at mid-span locations have the same safety consequences. Multiple failures in a lower beam could cause a piece to fall to the core plate, possibly damaging in-core instrumentation, but this would not interfere with control rod insertion. Failure of all the rim pins would not result in movement of the grid of beams because the rim and the cover plates will restrain the ends of the beams without the pins.

The top guide is visually observable during each refueling outage. Therefore, even though there is no safety consequence, cracking resulting in beam separation could be detected.

Locations 2 and 3 – Aligner pins and sockets in top guide and shroud

Analyses have shown that degradation of control rod insertion does not occur until the extent of cracking is sufficient to result in a sustained movement of the top guide by more than 2.5 inches. The "egg-crate" design of the top guide and the close packing of the fuel assemblies provides substantial redundancy to resist local movement.

Therefore potential movement would occur only if the entire core were repositioned. Table 3-2, Matrix of Inspection Options, provides a summary of options at each location. Peach Bottom is a BWR/4 without wedges for locations 2,3. As per the Table, a plant specific analyses was performed that indicates the amount of weld needed to resist the seismic load. This number is less than 20%. Therefore, as identified in the Table, under plant-specific analyses, if less than 20% of the weld is required, no inspection is needed. Moreover, reactivity control would also be achieved by operator initiation of SLC system in accordance with the EPG's.