

November 20, 2002

LICENSEE: Carolina Power & Light

FACILITY: Robinson Nuclear Plant

SUBJECT: SUMMARY OF MEETINGS BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION (NRC) STAFF AND CAROLINA POWER & LIGHT REPRESENTATIVES TO DISCUSS THE ROBINSON NUCLEAR PLANT LICENSE RENEWAL APPLICATION

On October 23, and 24, 2002, the NRC staff (the staff) met with members of the Carolina Power & Light (CP&L) Company in a number of public meetings to discuss the license renewal application (LRA) for the Robinson Nuclear Plant (RNP). The list of attendees is enclosed.

During the morning of October 23, 2002, the NRC staff met with members of CP&L to review a sample of environmental qualification (EQ) calculations. The following calculations were reviewed by the staff:

- a) EQDP-1.0, Rev. 9, ASCO Solenoid Valves - AQR Report (4.4.1.2)
- b) EQDP-1.1, Rev. 2, ASCO Solenoid Valves
- c) EQDP-2.0, Rev. 6, Limitorque Model SB-3 and SBM-00 MOV Actuators - inside containment (4.4.1.4)
- d) EQDP-2.1, Rev. 5, Limitorque MOV Actuators
- e) EQDP-3.0, Rev. 13, Rockbestos Cable - Firewall III (4.4.1.5)
- f) EQDP-8.1, Rev. 6, Westinghouse Motors - Frame 506 UPZ, 509US, and SBDP - RHR, SI Pumps, HVA 6A, 8A, & 8B (4.4.1.11)
- g) EQDP-9.0, Rev. 4, Crouse-Hinds Electrical Penetration Assemblies (4.4.1.13)
- h) EQDP-15.1, Rev. 6, Kerite FR2/FR3 Insulated Multiconductor Cable (4.4.1.27)
- i) EQDP-18.1, Rev. 2, Westinghouse CET/CCM - Reference Junction Boxes and Potting Adaptors (4.4.1.32)
- J) EQDP-19.1, Rev. 4, Gamma - Metrics Excore Neutron Detectors (4.4.1.34)
- k) EQDP-31.0, Rev. 6, Cable - PVC and XLPE Outside Containment (4.4.1.43)
- l) EQDP-33.0, Rev. 4, Grease - Motors and MOVs (4.4.1.44)
- m) EQDP-12.1, Rev. 2, Raychem Splices - NPKV Stub Kits (4.4.1.19)
- n) EQDP-34.0, Rev. 6, Target Rock Solenoid Valves (4.4.1.45)

Based on the review, the participants discussed the following:

- All EQ calculations are done by using design temperature or measured temperature. The measured temperatures at pressurizer cubicles are higher than the design temperature. These higher temperature values are used for equipment in that area.
- Ohmic heating for power cables are properly considered. Total temperature due to ohmic heating is 72 °C ( 32 °C rises more than 40 °C ambient).

- Activation energies have not been changed.
- Wear cycle aging should be addressed for motors, limit switches, solenoid valves, and multipin connectors.
- For normally de-energized solenoids, the RNP calculations (EQDP-1.0, Rev. 9, and EQDP-1.1, Rev. 2) assumed these valves are normally de-energized and the energization time during testing of the valves was considered to be insignificant from an aging standpoint. The staff discussed the potential impact of energization during the testing of these valves and its effect on the time-limited aging analysis (TLAA). The licensee agreed to investigate the staff's concern.
- Motor aging due to a wear cycle is not addressed in 4.4.1.11 (EQDP - 8.1, Rev. 6).
- The qualification of Westinghouse CET/CCM - reference junction boxes and potting adaptors (4.4.1.32) - has been projected to the end of the period of extended operation in accordance with 10 CFR 54.21(c)(1)(ii). The calculation stated that the potting adaptors are required to be replaced every 29 years. Section 4.4.1.32 of the LRA needs to be revised to reflect this.
- Section 4.4.1.43 of the LRA should provide additional discussion of the short duration periods that power cables are energized. EQDP-31.0, Rev. 6, was reviewed and it was found that all power cables addressed by the package are energized for short durations, resulting in negligible ohmic heating effects.
- The target rock solenoid valves (EQDP-34.0, Rev. 6) package did not list voltage. Additionally, the package should make a statement concerning effects of solenoid cycling on aging.
- Sections 4.4.1.3, 4.4.1.26, and 4.4.1.37 of the LRA listed a normal dose as  $10^3$  rads, rather than  $10^6$  rads as used for other equipment nearby. The applicant agreed to investigate the staff's concern.

During the afternoon of October 23, 2002, the subject of the meeting was the demonstration and use of a review tool, prepared to assist in aging management review of the mechanical systems portion of the RNP LRA. The presentation began with background discussion of basis for LRA Tables 3.X-1 (consistent with GALL) and 3.X-2 (different from GALL). The presentation continued with a demonstration of the review tool by component/commodity group items in Table 3.2-1 (Engineered Safety Systems).

Action items from the meeting for CP&L:

- Provide a tool, which provides the system breakdown for the 3.X-2 tables.
- Provide a comparable set of tools for Civil (Tables 3.5.1 and 3.5.2).
- Relative to the AMP, define "enhancement" and "exception."
- Formally transmit review tools so that they are on the docket. (The project manager asked that submittal under oath and affirmation be investigated.)

The NRC staff asked several questions and/or commented. Many of the following items are likely to be the subject of an RAI:

- The RNP LRA must be specific. Verbiage such as “RNP AMP methodology assumed that ...” (discussion of Item 2 of Table 3.2-1) will require clarification.
- Application of the Bolting Integrity Program is limited. Why was it not applied to all systems with bolted connections?
- How does the Bolting Integrity Program relate to the Boric Acid Corrosion Program? (Both lists loss of mechanical closure integrity due to loss of material due to aggressive chemical attack as an aging effect/mechanism.)
- Why is boric acid corrosion of galvanized steel components not an aging effect/mechanism of concern for RNP?

On October 24, 2002, NRC staff and members of the CP&L met again. Several of the staff had prepared “draft” questions (which are likely to become draft RAIs). Other questions were posed during the meeting. CP&L provided following clarification:

- RCS Screening:
  - Connected (non safety) piping was addressed in supplemental information provided by CP&L in response to interim staff guidance (ISG).
  - The basis for the pressurizer relief tank (PRT) being in scope was that it is credited for Appendix R and station blackout (SBO).
- Steam and Power Supply:
  - Several questions should be answered by the review tools.
  - The main steam isolation valve (MSIV) accumulator tank contains Nitrogen and is not near a potential source of boric acid, so TLAA, flow accelerated corrosion (FAC), chemistry, and boric acid corrosion (BAC) AMPs are not applicable.
  - Raw water exposure to auxiliary feed water (AFW) piping is not credible, due to the configuration; i.e., locked closed service water in series with a locked closed AFW valve with an open tell-tell drain between the two. Exposure would be the result of an “event,” not an aging mechanism.
  - Oil analysis (Table 3.4-1, Item 4) is part of routine conditioning monitoring at RNP.
  - AFW suction piping is not buried. It is not a concrete trench that runs from the (outdoor, stainless steel) condensate storage tank (CST) through the turbine building.
  - Steam generators (SGs) are Westinghouse designs which use feed ring and J nozzle, rather than preheater, designs.
  - Portions of piping that are labeled as AFW and chemical feed tie into, and are not isolable from the FW system. These portions of AFW and chemical feed are subject to the same aging effects/mechanisms as the applicable portion of FW (e.g., thermal fatigue).
  - Turbine and extraction steam are in scope of license renewal (LR); however, the LR function is active (turbine trip and closed extraction steam valve), so no AMR is required. Discussion of Item 6, Table 3.4-1, should have indicated that no AMR is required, rather than indicating that it is not in scope.

- Fouling of a heat transfer surface is the appropriate aging effect/mechanism for Item 9 of Table 3.4.2. A flow blockage from fouling is not appropriate.
- Fire Protection:
  - Booster pump and jockey pump refer to the same piece of equipment.
- ECCS:
  - Vacuum breakers on the spray additive tank are addressed under valves, piping, tubing, and fittings (as a safety relief valve (SRV)) in the LRA.
- RCS:
  - Several questions should be answered by the review tools.
- Auxiliary Systems:
  - The penetration coolers are no longer in service (abandoned in place) and are not in scope for LR.

Questions which were not addressed include:

- RCS screening:
  - Does the pressurizer spray nozzle (internal) perform an LR intended function? (The applicant responded that it had no safety related function, but could confirm whether or not credited for safe shutdown following a fire.)
- Steam and Power Supply:
  - What is the basis for FAC as an aging mechanism on AFW?
  - Closure bolting – similar questions regarding bolting integrity as asked on previous day during the presentation of the tools.
- Fire Protection:
  - Are any coatings on structural members credited for fire protection (FP)?
  - Flammastic is referenced in the license condition of SER dated February 28, 1978; has it been included in scope for LR?
  - Does RNP have strainers (other than traveling water screens) in FP systems? If so, are they in scope for LR?
  - Where, in Section 2 and Section 3 are CO<sub>2</sub> and Halon SSC discussed?
  - Where/how are heat activated devices (HADs) discussed in the LRA?
  - Where/how are fire hoses (short lived) discussed in the LRA?
- ECCS:
  - What is the containment purge LR system's intended function (other than containment isolation)?
  - What is the purpose of the N<sub>2</sub> blanket over the caustic spray additive tank?
  - Boundary drawing legends/notes indicate that "P" means that the valve closes on the containment isolation signal. The CS drawing (5379-1082LR, sheet 3) did not match the drawing legends/notes.
  - Where are CS nozzles addressed in the LRA?

- Is H<sub>2</sub> control function in scope of LR? If so, is it accomplished via purge or recombiner?
- RCS:
  - What is the material of core support pads?
  - RCS Bolting on the Westinghouse pressurizer generic topical report (GTR) SER has some specific action/information that may be applicable.
  - Be prepared to discuss which issues regarding the Davis Besse head event and the Summer Nozzle cracking events should be considered in LR and how RNP is currently dealing with them.
- Auxiliary Systems:
  - Is ventilation required for safe shutdown controls?
  - What system is the H<sub>2</sub> analyzer associated with and is it in scope of LR (pressure boundary or otherwise)?
  - The debris screens for the containment purge valves were not shown as in scope, but the reviewer felt that they had an LR intended function.
  - The reviewer was having difficulty determining where the various heat exchangers (and related components) were handled, based on a review of the application and boundary drawings.
  - No link was provided to the UFSAR section in the application for spent fuel cooling.
  - Neither the spent fuel pool makeup line nor the spent fuel pool cooling system was included within scope of LR.
- ASME Section XI AMP:
  - The SG secondary side cone weld geometry reduces the effectiveness of conventional NDE techniques. This was the subject of IE 90-04. GALL requires further evaluation regarding examination of these welds. RNP will need to address.

The following was discussed during a meeting on the electrical portions of the RNP LRA:

A drawing was requested to show what equipment would be in scope for SBO. The applicant agreed to supply a drawing and noted that Progress Energy would fully comply with the ISG on SBO.

It was noted that the application did not specifically address fuse holders and no discussion was provided for why an AMP was not needed. The applicant responded that this issue is currently being reviewed and LR documentation is being updated. Fuse holders at RNP are considered to be "connections" similar to terminal strips, are made of the same materials as terminal strips, and have the same aging mechanisms.

The reviewer questioned why there was no AMP for non-EQ penetrations. The applicant stated that the materials in the penetrations that provide electrical insulation were evaluated and that no aging mechanism requiring aging management was identified.

It was noted that aging management program, "E2" (calibrations for radiation and neutron monitoring equipment), was not implemented. The applicant stated that program "E1" (visual inspections) would address all accessible cables within the scope of LR at RNP, including radiation and neutron monitoring cables within the scope of LR.

The applicant was asked why there was no program for low voltage, wetted cables. The applicant responded that industry OE had identified an aging mechanism for medium voltage (2 kV to 15 kV), wetted cables, but that there was no recognized aging mechanism for low voltage wetted cables. Therefore, there was no aging mechanism that required management for low voltage wetted cables.

An RAI will be issued requesting information on any major event that may have changed the aging environment for EQ components.

A question was asked concerning aging mechanisms for bolted connections on buses. The applicant responded that would be reviewed.

A draft of this meeting summary was provided to the applicant to allow them the opportunity to comment prior to the summary being issued.

*/RA/*

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Office of Nuclear Reactor Regulation

Docket No.: 50-261

Enclosure: As stated

cc w/encl: See next page

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