December 22, 2000

LICENSEE: Florida Power and Light Company (FPL)

SUBJECT: SUMMARY OF OCTOBER 31, 2000, MEETING WITH FPL REGARDING REVIEW OF EQUIPMENT QUALIFICATION (EQ) CALCULATIONS FOR TURKEY POINT UNITS 3 AND 4

On October 31, 2000, representatives of FPL Company met with the Nuclear Regulatory Commission staff to review a sample of EQ calculations. A list of meeting attendees is enclosed. The following calculations were reviewed by the staff.

1.	4.4.1.1	ANACONDA Cables, FPL Document Package 1.0, Rev 4
2.	4.4.1.3	ASCO Solenoid valves, FPL Document Package 3.0, Rev 6
3.	4.4.1.7	CONAX Penetrations, FPL Document Package 6.1, Rev 5
4.	4.4.1.12	General Cables, FPL Document Package 12.0, Rev. 2
5.	4.4.1.15	Joy Engineering Containment Cooler and Emergency Containment Filter Fan Motors, FPL Document Package 16.0, Rev. 5
6.	4.4.1.16	Limitorque Valve Operators with Reliance Motors for the Inside Containment, FPL Document Package 17.1, Rev. 8
7.	4.4.1.20	Okonite Cables, FPL Document Package 19.0, Rev. 4
8.	4.4.1.25	Samuel Moore Cables, FPL Document Package 25.0, Rev. 4
9.	4.4.1.27	Westinghouse Residual Heat Removal Pump Motors, FPL Document Package 31.2, Rev 4
10.	4.4.1.32	Kerite FR2/FR Cables, FPL Document Package 34.1, Rev 2

Based on the review, the participants discussed the following items.

1. In Section 4.4.1 of the application under “Thermal Considerations”, FPL states that for conservatism a temperature rise of 10^{o}C was added to the maximum design operating temperature for continuous duty power cables to account for ohmic heating. At the meeting, FPL clarified that this 10^{o}C rise in temperatures was added to all power cables in the EQ Program to account for ohmic heating. FPL identified that there are no power cables in the EQ Program which are normally energized, making the consideration of continuous ohmic heating a very conservative assumption for cable aging. The staff was interested in the basis for 10^{o}C (such as, if 10^{o}C was based on the worst case consideration i.e., maximum current (largest 460 volt load) and lower size cable (higher resistance). The Turkey Point EQ program utilizes ambient temperatures of 50^{o}C for inside incontainment, and 40^{o}C for areas outside containment.

2. In many of the calculations reviewed at the meeting and also as identified in Section 4.4.1, FPL states that based on thermal and radiation considerations, the existing analyses remain valid for the period of extended operation and thus falls under 10 CFR 54.21(c)(1)(i). The basis for FPL’s position, as stated in the meeting, was as follows:

- For radiation considerations, the projected 60 year Total Integrated Dose (TID) inside containment is bounded by the current 40 year inside containment TID. The TID is calculated by adding the normal operating dose to the established post accident dose. Because the established post accident dose is large when compared to the change in normal operating dose when going from 40 to 60 years (normal operating doses for 60 years were obtained by multiplying current 40 years normal doses by 1.5), and the original 40 year inside containment TID was rounded up, the current 40 year inside containment TID is bounding for 60 years.

- For temperature, 60 year values were obtained using accepted Arrhenius methodology and the original activation energies calculated from the Franklin Research Test Reports. Since the original aging calculations specified the margin in terms of temperature, it was left there for the 60 year calculations.

Since the activation energies, qualification temperatures, and methodologies were unchanged, and since no new qualification testing and analysis was performed, FPL classified these TLAAs under 10 CFR 54(c)(1)(i).

The staff's position is that for many of these calculations, the component qualification temperatures were calculated for 60 years using the Arrhenius method, and total integrated dose for the 60-year period is calculated by adding 1.5 times normal operating dose for 40 years to established accident dose, and, therefore, should be classified under 10 CFR 54.21(c)(1)(ii). The final classification of these TLAAs will be reflected in the SER.

3. The bounding radiation dose values used for equipment qualification calculations inside containment was discussed. FPL discussed each of the ten examples given above. The staff sought to understand whether a set of values or one value was used for the calculations.

4. For ASCO solenoid valves, the FPL calculation assumed that these are normally de-energized and the energization time during testing of the valves (which could be 1000 times over their lifetimes) was considered to be insignificant from an aging standpoint. This is based on the fact that it takes 2 hours for an ASCO solenoid valve to reach thermal equilibrium once it is energized. In addition, 60 years is 29% of the calculated de-energized life of 207 years (EQ Documentation Package 3.0, Revision 6). This leaves 71% of the calculated life as margin. Multiplying the calculated inside containment energized life of 4.6 years by 71% leaves 3.25 years that the normally de-energized solenoid valves could be energized over the 60 year qualified life. This would allow each of the 1000 cycles to remain energized for over 28 hours (3.25 years x 365.25 days/year x 24 hours/day/1000 cycles) plus the additional time to reach thermal equilibrium.

Once example of the above is the twelve solenoid valves associated with the Component Cooling Water to the Emergency Containment Coolers. These valves energize to allow flow to the coolers whenever they are operated. Doc Pac 16.0 indicates that the coolers are tested once a month for an hour, two one-hour

maintenance tests per year, and eight hours of other incidental operations per year. From this it can be seen that the solenoid valves would not reach an equilibrium temperature, and would see less than a total operating time of 24 hours per year. Hence, aging due to energization time is insignificant.

5. FPL stated that the revised package used additional information on the Thermalastic Epoxy Insulation system obtained from the original Bechtel calculation done for these motors. The accepted Arrhenius methodology was used on the additional test data to establish qualified life. FPL considered this TLAA to fall under 10 CFR(c)(1)(i) since the qualified life is based on originally available information and calculational methodology. The staff felt this calculation should be classified under 10 CFR 54(c)(1)(ii). The final classification of this TLAA will be reflected in the SER.

6. For item #9 related to RHR pump motors. The staff found the interface with the applicant helpful in performing their review of the Turkey Point License Renewal Application. Follow-up actions or information will be addressed by RAI, if needed. The conclusion on the acceptability of FPL's EQ TLAAs will be addressed in the staff's SER on the Turkey Point License Renewal Application.

/***RA***/

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Docket Nos. 50-250 and 50-251

Enclosure: As stated

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Enclosure