UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 59 TO FACILITY OPERATING LICENSE NO. NPF-2

AND AMENDMENT NO. 50 TO FACILITY OPERATING LICENSE NO. NPF-8

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-348 AND 50-364

Introduction

Alabama Power Company (the licensee) proposed Technical Specification (TS) changes for Joseph M. Farley Nuclear Plant, Units 1 and 2, by letter dated May 3, 1983, supplemented July 29 and September 23, 1983, and January 27 and September 6, 1984. The proposed changes involve TS's 3/4 8.2.3, 3/4 8.2.4 and 3/4 8.2.5 which provide specific Limiting Condition for Operation (LCO) and Surveillance Requirements for the Auxiliary and Service Water Building D.C. distribution systems. The licensee states that the proposed changes update the existing TS's to conform to the most recent Westinghouse standard specifications (NUREG-0452, Revision 4), current industry practice, and specific design parameters at Farley site. Our evaluation follows.

Discussion and Evaluation

Existing TS's at Farley are based on Regulatory Guide 1.129 and IEEE Standard 450-1975. The most recent guidance for TS's considers the later version of IEEE Standard 450-1980. We evaluated the licensee's proposed changes and specific differences which the licensee proposed. Our evaluation outline uses the corresponding item numbers noted in the licensee's bases paragraph of Attachment 1 to letter dated May 3, 1983. The remaining supplementary licensee letters provided additional technical justifications needed by our staff. These supplements have not materially changed the originally proposed changes to upgrade the existing TS's.

1. Standard Technical Specifications (STS) are based on the battery manufacturer's recommended full charge specific gravity of 1.215. With such a full charge specific gravity, the STS resultant test criteria are 1.200 for Category A testing (once per week) and 1.195 for Category B testing (once per 92 days). The Farley batteries have a manufacturer's recommended specific gravity of 1.210 for the service water building batteries and 1.215 for the auxiliary building batteries. As a result, an acceptable specific gravity criterion was established at 1.190

minimum specific gravity for both batteries. The licensee's proposed change in the specific gravity limits is based on the currently acceptable specific gravity criterion and conforms with the STS format. Thus, we accept the battery surveillance criteria for specific gravity of 1.195 for Category A testing and 1.190 for Category B testing as shown in Table 4.8-2.

The proposed Table 4.8-2 should contain a Category B allowable limit of 0.020 below the average of all connected cells if a cell is less than 1.190 in specific gravity. The licensee's existing TS value allows a cell specific gravity to be 0.080 below the value observed in the previous 92 day test. The licensee does not propose to change the value of 0.080 which was previously approved by the NRC staff during the licensing review of the facility. Therefore, the 0.080 value remains an acceptable value based on our previous evaluation and acceptance.

2. The STS float voltage criterion is 2.13 volts for the Category A and B limits and 2.07 volts for the Category B allowable. The current Farley Plant TS's require that the pilot cell voltage and the voltage of each connected cell be greater than or equal to 2.02 volts while under a float charge.

   However, the licensee proposed Category A and B limits of 2.08 volts (in Table 4.8-2) which are less than the 2.13 volts shown in the STS. The licensee justifies that (1) the cell float charging voltage is not, by itself, a comprehensive indication of the state of charge of the battery, (2) a single cell (pilot cell) can have a degraded voltage (less than 2.08 volts) and the batteries as a whole can still perform the design function as discussed in the STS Bases, and (3) IEEE Standard 450-1980 does not consider a battery to be potentially degraded unless its voltage drops below 2.07 volts. Also, Farley plant has experience indicating that a cell voltage of less than 2.13 volts under float charge had not indicated inoperability of the entire battery. In twenty cases where at least one cell was below 2.13 volts, the minimum average specific gravity of 1.197 equates to a capacity of approximately 90% of the capability which is well above that required by the design load profile.

   The staff reviewed the licensee's proposals and the additional justifications provided. The staff has not based the acceptability of the above changes on a comparison of the proposed values to the STS. Our evaluation is based upon the licensee's proposed safety improvements which are in excess of the current Farley TS requirements. The licensee proposes the format (Table 4.8-2) in conformance with the STS. Also, the licensee proposes Category A and B limits of greater than or equal to 2.08 volts with an additional requirement that the average float voltage be greater than 2.13 volts in order for the battery to be operable.

We conclude that Category A and B limits of greater than or equal to 2.08 volts with the additional requirement of an average float voltage of 2.13 volts are enhancements of the reliability of the d.c. supply systems and, therefore, are acceptable alternatives.

3. The STS criteria requires declaring the batteries inoperable if the connection resistance or electrolyte temperature values deviate from the STS limits. The proposed TS allows a 24 hours action period to correct either temperature or connection resistance deviation without declaring the battery inoperable. IEEE Standard 450-1980, sections 4.4.1 (2) and 4.4.1 (3) states that the 5°F temperature and connection resistance deviations are merely an indication of conditions that can be easily corrected prior to the next general inspection. Also, the Standard does not state that these are indications on which the battery should be declared inoperable.

   The staff has reviewed the above proposals and the licensee's justification. The staff agrees with the justification based on IEEE Standard 450-1980. However, the staff has based acceptability of the 24 hours action period for corrective action upon safety improvements which are more stringent than the current TS requirements. Therefore, the proposed TS regarding the period for corrective action is acceptable.

4. The STS specify a maximum resistance of 150 microhms of each cell to cell and terminal connection. The licensee proposed a resistance of 1500 microhms from post to post for the connection resistance check on the Service Water Building d.c. distribution system batteries.

   This battery has adequate capacity to supply a load current of 25 amperes for one minute and 1 ampere for 2 hours. The charger will supply at least 3 amperes for at least 4 hours. This battery bank consists of 20 castings, each casting contains three cells of the battery. Therefore, there are 19 connectors and the resistance of each connector for three cells is 1500 microhms. The voltage drop per connector is calculated as 0.0375 volts based on 25 amperes with a total system voltage drop in the d.c. battery bank of 0.7125 volts.

   The system voltage drop of the Service Water Building battery bank is far less than that of a large size battery covered by the STS. The drop is less than 0.6% of system float charging voltage and system battery discharging voltage. The proposed resistance will not result in system charging and discharging voltage degradation and, therefore, is acceptable.

5. In accordance with the STS, all battery charger test amperages and times should be based on the actual system design standard. The licensee states that this is the case. Therefore, TS 4.8.2.3.2.c.4 which shows the charger test amperages of at least 536 amperes at greater than or equal to 125 volts for at least four hours is acceptable.

6. After receipt of our Generic Letter (GL) 83-27 dated July 6, 1983, the licensee, by letter dated July 29, 1983, withdrew the portion of the May 3, 1983 proposed change involving an extension of the 18-month surveillance intervals to 24-months. This was to be a minor administrative change to accommodate future 18-month refueling intervals. However, GL 83-27 disallowed such a change.

7. The licensee proposed changes to TS 3.8.2.4, Auxiliary Building D.C. Distribution - Shutdown, to comply with the STS for operating modes 5 and 6 with the exception of the part relating to depressurizing the reactor coolant system through a vent. The existing design at Farley of a low pressure depressurizing system does not utilize power from the Auxiliary Building D.C. Distribution System. Therefore, this part of the STS is not applicable to Farley. The proposed changes which conform to the intent of the STS are acceptable.

Safety Summary

Based on our extensive review of licensee submittals, as well as numerous discussions which we held with the staff of the licensee, and the specific details of the evaluation as noted above, we conclude that the proposed changes to the Technical Specifications are acceptable. The changes constitute a desirable safety improvement in surveillance requirements of the d.c. power distribution at Farley site. The changes are clearly within Commission acceptable criteria for battery system surveillances, conform to NUREG-0452 with acceptable alternatives, and are within the original license basis for the facility.

Environmental Consideration

These amendments involve a change in the installation or use of the facilities components located within the restricted areas as defined in 10 CFR 20. The staff has determined that these amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, these amendments meet

the eligibility criteria for categorical exclusion set forth in 10 CFR Sec 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: May 24, 1985

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