TERA

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

JUN 19 1980

Docket No. 50-364

Mr. F. L. Clayton, Jr., Senior Vice
President
Alabama Power Company
Post Office Box 2641
Birmingham, Alabama 35291

Dear Mr. Clayton:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR FARLEY 2 OPERATING LICENSE APPLICATION

As a result of our continuing review of the operating license application for the Joseph M. Farley Nuclear Plant Unit 2, we have developed the enclosed request for additional information and position.

Please provide the information requested in the enclosure. Our review schedule is based on the assumption that the additional information will be available for our review by June 30, 1980. If you cannot meet this date, please inform us within 7 days after receipt of this letter so that we may revise our scheduling.

Sincerely,

A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

8007020 473 A

Mr. F. L. Clayton, Jr., Senior Vice
President
Alabama Power Company
Post Office Box 2641
Birmingham, Alabama 35291

cc: Mr. Alan R. Barton
Executive Vice President
Alabama Power Company
Post Office Box 2641
Birmingham, Alabama 35291

Mr. Ruble A. Thomas
Vice President
Southern Company Services, Inc.
Post Office Box 2625
Birmingham, Alabama 35202

Mr. George F. Trowbridge
Shaw, Pittman, Potts and Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION
JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2
DOCKET NO. 50-364

Requests from the following branch in NRC are included in this enclosure. Requests and pages are numbered sequentially with respect to requests transmitted following issuance of SER Supplement No. 3.

MATERIALS ENGINEERING BRANCH POSITION FOR

ALABAMA POWER COMPANY
FARLEY UNIT NO. 2
SECTION XI EXEMPTION OF ECCS AND RHR
COMPONENTS FROM VOLUMETRIC EXAMINATION

BACKGROUND

The preservice inspection (PSI) program submitted by the applicant and the inservice inspection (ISI) program for Farley Unit No. 2 are based on the 1974 Edition of Section XI including Addenda through Summer 1975. Incorporated into these programs are Section XI exemptions contained in the 1974 Edition Paragraphs IWC-1220(c) and IWC-1220(a) for "chemistry control" of the ECCS and "low operating pressure and temperature," respectively. The 1977 Edition of Section XI including Addenda through Summer 1978 does not permit the exemption of these components in the ECCS and RHR systems.

Farley Unit No. 2 is currently using the "chemistry control" exemption for the boron injection system and the accumulator and associated piping. The "low operating pressure and temperature" exemption is used for certain piping in the refueling water storage tank, high head pumps, low head pumps and containment spray systems.

The revision to 10 CFR 50.55a that was effective on November 1, 1979 requires that the initial 10 year ISI program be based on the 1977 Edition of Section XI including all Addenda through Summer 1978 with certain exceptions defined in 10 CFR 50.55a for facilities that receive an operating license after November 1, 1980.

TECHNICAL EVALUATION

The exemption criteria in Paragraph IWC-1220 have been modified in the 1977 Edition of Section XI, in part, through NRC participation in ASME Code activities and revisions to the regulation. Pipe cracking in these systems has been the subject of several I & E Bulletins and NRC study groups. The Section XI exemption criteria have been modified in the form of augmented examination requirements on a case-by-case basis during the reviews of the initial and updated ISI programs. The basic principle in these modifications is the ECCS and RHR systems should not be completely exempted from inservice volumetric or surface examination based on Section XI criteria.

Paragraph IWC-1220(c) of Section XI, 1974 Edition, permits the exemption from examination of ECCS components provided that the control of water chemistry is verified by periodic sampling and testing to minimize corrosive effects, particularly stress corrosion. The "chemistry control" provision was deleted from Paragraph IWC-1220 in the 1977 Edition of Section XI because practical evaluation, review and acceptance standards could not be defined. Paragraph IWC-1220(a) of Section XI, 1974 Edition, permits the exemption from examination of components where both the design pressure and temperature are equal to or less than 275 psig and 200°F, respectively. Paragraph IWC-1220(b) of Section XI, Summer 1978 Addenda, does not permit the exemption from examination of components in the ECCS and the RHRS that operate below 275 psig or below 200°F. Welds in these Code exempted systems have experienced service failures

and were the subject of I & E Bulletins such as No. 79-17, "Pipe Cracking in Stagnant Borated Water Systems at PWR Plants."

The recent revision to 10 CFR 50.55a(b) requires the use of the 1974 Edition of Section XI for the ECCS, RHRS and containment heat removal system (CHRS) because the Section XI examination sampling plan for ASME Code Class 2 piping is in the course of preparation.

RECOMMENDATIONS

The recent revision to the 10 CFR 50.55a(b) requires that appropriate ASME Code Class 2 pipe welds in the RHRS, ECCS, and CHRS be examined. It is our position that water chemistry control to minimize stress corrosion described in Paragraph IWC-1220(c) of Section XI, 1974 Edition, is not an acceptable basis for exempting ECCS components from inservice examination. We also take the position that a representative sample of the ECCS and RHRS welds should be examined by volumetric or surface examination techniques during the inservice inspections.

To implement these positions for Farley Unit No. 2, we will require the following:

1. The ISI program must include periodic volumetric or surface examination of a representative sample of welds, in the ECCS, RHRS and CHRS. To complete our review of the ISI program, the number and location of welds exempted by IWC-1220 criteria must be identified. An augmented ISI program may be required for those components exempted by the Code for low pressure and temperature operation or small pipe diameter where added assurance of structural reliability is necessary.

2. In the event that an operating license is issued after November 1, 1980, the initial ISI program must be based on the 1977 Edition of Section XI including Addenda through Summer 1978 with the exceptions defined in 10 CFR 50.55a.

3. The exemption contained in Paragraph IWC-1220(c) of Section XI, 1974 Edition, for "chemistry control" is not acceptable.

4. A preservice examination of the welds exempted by IWC-1220 will not be required because construction is essentially complete and the examination sample will be determined on a plant specific basis during review of the ISI program.

122.0 MATERIALS ENGINEERING BRANCH - COMPONENT INTEGRITY SECTION

122.1 According to FSAR Table 5.2-20, SA 533 Class 2 steel is used in the steam generator and pressurizer. Demonstrate the fracture toughness adequacy of this material as required by Paragraph I.A, Appendix G, 10 CFR Part 50.

122.2 Provide sufficient fracture toughness data for the ferritic materials in the steam generator and pressurizer. (Data should include values for NDTT, T_{NDT}, and upper shelf energy.) Define and determine an RT_{NDT} for each material specimen as required by Paragraph IV.A.2(a) of Appendix G, 10 CFR Part 50.

122.3 According to FSAR Table 5.2-20, SA 540 Grades B23 and B24 steel is used for closure bolting in the reactor coolant pump. To establish the actual material yield strength, as required by Paragraph I.C, Appendix G, 10 CFR Part 50, identify the class(es) of SA 540 Grades B23 and B24 used.

122.4 Provide details of the program for calibrating temperature instruments and Charpy V-notch test machines. This information should be sufficient to demonstrate that the program is in compliance with Paragraph NB-2360 of the ASME Code as required by Paragraph III.B.3, Appendix G, 10 CFR Part 50.

122.5 Provide information, including training and experience, to demonstrate that the qualifications of individuals who performed fracture toughness tests are in compliance with the requirements of Paragraph III.B.4, Appendix G, 10 CFR Part 50.

122.6 Paragraph III.C.2, Appendix G, 10 CFR Part 50, specifies that every fracture toughness test specimen from the reactor vessel beltline be subjected to a heat treatment that produces metallurgical effects equivalent to those produced in the vessel material throughout its fabrication process. Identify all specimens that do not meet this requirement and provide technical justification for use of such specimens in establishing fracture toughness properties of the reactor vessel beltline.

122.7 In weld seam 10-923, two of the nine specimens tested had impact energies less than 75 ft-lbs at a test temperature of 10°F. To demonstrate compliance with the upper shelf impact energy requirements of Paragraph IV.B of 10 CFR Part 50, the applicant must supply additional data, possibly from either baseline surveillance material or information available in the literature, and/or analyses to define the minimum upper shelf energy for weld seam 10-923. The data and/or analyses used to demonstrate compliance with the upper shelf requirements of Paragraph IV.B must include variables that affect upper shelf toughness, e.g., chemical composition, fabrication history, weld wire and heat of filler metal. The applicant must also supply the individual data points obtained from the C_V impact tests for each of the base metal heats in the reactor vessel beltline.

122.8 The materials surveillance program uses six specimen capsules, containing reactor vessel steel specimens of the limiting base material, weld metal material, and heat affected zone material. To demonstrate compliance with Appendix H, 10 CFR Part 50, provide a table that includes the following information for all the surveillance specimens:

(1) actual surveillance material;
(2) beltline material from which the specimen was obtained;
(3) test specimen type and orientation;
(4) fabrication history of each test specimen;
(5) chemical composition of each test specimen; and
(6) heat of filler material, production welding conditions, and base metal combinations for weld specimens.

Provide the lead factor for each specimen capsule calculated with respect to the vessel inner wall.

122.9 To demonstrate the integrity of the reactor coolant pump flywheels, supply the Charpy V-notch impact and tensile data for each flywheel, explicitly stating the material used for each flywheel.

Also, confirm that welding, including repair welding, was not performed on any finished flywheel. If welding were performed, identify the flywheel(s) and location of the welds.