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NMS-88-0195



Docket Nos. 50-348  
50-364

March 23, 1988

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Gentlemen:

J. M. Farley Nuclear Plant - Units 1 and 2  
Rapidly Propagating Fatigue Cracks in Steam  
Generator Tubes - NRC Bulletin No. 88-02

NRC Bulletin No. 88-02 requested that Alabama Power Company implement actions to minimize the potential for a steam generator tube rupture event caused by a rapidly propagating fatigue crack such as occurred at North Anna Unit 1 on July 15, 1987. Specifically, within 45 days of receipt of this bulletin, Alabama Power Company is to submit a written report detailing the status of its compliance with the bulletin provisions. If denting is found, the 45-day report is to include a schedule for completion of an analysis to assess the potential for a failure such as experienced by North Anna. The 45-day report is also to include the results of a review for evidence of denting at the uppermost tube support plate. If denting is found, an enhanced primary-to-secondary leak rate monitoring program is to be implemented and documented as part of the 45-day report. This interim program is to remain in effect until NRC review and approval of a long-term program to minimize the probability of a rapidly propagating fatigue failure is received. The long-term program is to be submitted to the NRC in sufficient time to allow NRC staff review and approval prior to the next scheduled restart from a refueling outage. Where the next such restart is scheduled to take place within 90 days, staff review and approval for restart from that outage will not be necessary. The analysis, noted above, to assess the potential for a steam generator tube failure is to be submitted as part of the long-term program. In the event that no denting is found, commitments to review future steam generator tube inspection results and to implement appropriate actions are to be made.

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Upon receipt of NRC Bulletin No. 88-02, Alabama Power Company immediately initiated actions to review its most recent steam generator inspection data for evidence of denting. It soon became apparent that, due to the proximity of the Unit 1 outage, it would be more practical to conduct the analysis for susceptible tubes prior to reviewing inspection data for evidence of denting. Due to the nature of this review and the availability of skilled manpower resources, it was not practical to simultaneously conduct an analysis to identify susceptible tubes and to review inspection data for evidence of denting. This analysis of susceptible tubes includes a review of inspection data for an assessment of the depth of penetration of each antivibration bar (AVB). The timely completion of the analysis will potentially allow sufficient time to implement interim corrective actions on Unit 1 during the forthcoming outage, if only a minimal number of tubes were involved.

The results of the reviews for denting for both Units 1 and 2 are not available at this time. Alabama Power Company has therefore initiated the interim compensatory measure of an enhanced primary-to-secondary leak rate monitoring program on both Units 1 and 2. This interim program is described in the enclosure to this letter and will remain in effect until the denting determination is made. If no denting is determined, Alabama Power Company will advise the NRC of its plans to address the provisions of paragraph B of the bulletin. If denting is determined, the interim program will remain in effect until the NRC staff approves the long-term program discussed in the bulletin.

Farley Nuclear Plant Unit 1 is scheduled to restart from the next refueling outage within 90 days of receipt of this bulletin. NRC Bulletin No. 88-02 was received on February 8, 1988. Unit 1 is currently scheduled to leave Mode 5 on May 5, 1988 and enter Mode 2 on May 8, 1988. NRC approval of the long-term program is therefore not required for either Unit 1 or Unit 2 at this time; however, Alabama Power Company will coordinate with the NRC Project Manager to ensure that the analysis submittal schedule for both Farley Nuclear Plant units will be acceptable to allow timely NRC approval for the restart from the next refueling outages for each unit (Unit 1 ninth, Unit 2 sixth).

On March 8, 1988 Alabama Power Company initiated a telephone conversation with the NRC staff to discuss the requirements of NRC Bulletin No. 88-02. Since the denting review could not be completed within the 45-day requirement and an interim enhanced leak rate monitoring program was already scheduled to be implemented, Alabama Power Company discussed its plans to address the denting review and flow analysis issues in an alternative manner. This alternative involves Westinghouse, the steam generator designer, utilizing a flow peaking analysis which factors in the depth of penetration of each AVB to locate potentially susceptible tubes in both units. Westinghouse is scheduled to specify which tubes are potentially susceptible by April 6, 1988 for Unit 1 and by April 22, 1988 for Unit 2. These potentially susceptible tubes will then be reviewed for evidence of denting utilizing inspection data from prior refueling outages (Unit 1 seventh, Unit 2 fifth) of each unit with a report from Westinghouse expected by May 15, 1988. In addition, at a future date, a review of both

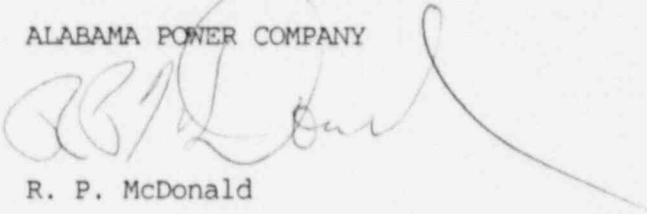
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Farley units inspection data will be conducted, on a sampling basis, for all regions of the upper support plates to determine the extent of any evidence of denting which may be present. Submittal of the bulletin required long-term program to include the results of the analyses stated above will then be submitted for NRC review and approval well in advance of the next scheduled refueling outage of each unit.

Alabama Power Company considers that the alternative approach with supporting justification described above satisfies the intent of NRC Bulletin No. 88-02. If there are any questions, please advise.

Respectfully submitted,

ALABAMA POWER COMPANY



R. P. McDonald

RPM/RSF:csl-V5

Enclosure

cc: Mr. L. B. Long  
Dr. J. N. Grace  
Mr. E. A. Reeves  
Mr. W. H. Bradford

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 23d DAY OF March, 1988



NOTARY PUBLIC

My Commission Expires: 9-11-88

ENCLOSURE

LEVEL 1 - Given that no primary to secondary leakage exists, sampling is conducted as shown in the attachment.

If one of the following radiation monitors alarms, a steam generator blowdown or air ejector sample is immediately collected to determine leak rate.

<u>Monitor**</u>	<u>Service</u>	<u>Alarm</u>	<u>Out of Service</u>
RE-15A	Condenser Air Ejector	150 cpm (Unit 1)* 400 cpm (Unit 2)*	Note 1
RE-15B	Condenser Air Ejector (intermediate range)	4.5 mR/h	Note 2
RE-15C	Condenser Air Ejector (high range)	50 mR/h	Note 2
RE-23A&B	Steam Generator Blowdown	500 cpm (Unit 1)* 300 cpm (Unit 2)*	Note 3
RE-60A,B,C&D	Main Steam Relief and Atmospheric Steam Dump and AFW Turbine Exhaust	71 mR/h	Note 4

Note 1: Obtain air ejector grab sample every eight hours.

Note 2: Verify 15A is in service once per 24 hours or obtain air ejector grab sample every eight hours.

Note 3: No action for 23A. Sample every eight hours if  $DEI > 0.01$  or once every 24 hours if  $DEI \leq 0.01$  for 23B.

Note 4: Verify 23A or 23B is in service once every 24 hours or obtain steam generator blowdown grab sample once every 24 hours.

\* Adjusted based on background levels and current plant operational status.

\*\* Calibration performed in accordance with Technical Specifications except RE-23A which is performed once every 18 months.

If primary to secondary leakage is determined to exist while in Level 1, the leak rate will determine the appropriate level of action to be entered. Leak rate data will be trended on a daily basis.

LEVEL 2 - Leak rate determined to be less than 25 gallons per day (gpd).

LEVEL 3 - Leak rate determined to be greater than or equal to 25 gpd but less than 50 gpd.

LEVEL 4 - Leak rate greater than or equal to 50 gpd.

Details of each monitoring level are provided in the attachment.

## ADMINISTRATIVE LIMITS

At a determined leak rate in excess of 150 gpd in any steam generator, power will be reduced to less than 50 percent within six hours.

At a determined leak rate in excess of 300 gpd in any steam generator, the plant will be in Mode 3 within three hours and will continue to cold shutdown.

## ATTACHMENT

<u>PARAMETER</u>	<u>LEVEL 1</u>	<u>LEVEL 2</u>	<u>LEVEL 3</u>	<u>LEVEL 4</u>
Gross Beta/Gamma	every 48 hours	every 48 hours	every 48 hours	every 48 hours
Tritium	every 7 days	every 48 hours (Note 2)	every 24 hours	every 24 hours
H3 Leak Rate	N/A	every 48 hours (Note 1)	every 24 hours	every 24 hours
Xe Leak Rate	N/A	every 48 hours (Note 1)	every 48 hours	every 24 hours
Na24 Leak Rate	N/A	every 48 hours (Note 3)	every 48 hours (Note 3)	every 24 hours (Note 3)
Gamma Isotopic	every 7 days	every 48 hours	every 24 hours	every 24 hours
SJAE Gas	every 31 days	every 48 hours (Note 2)	every 48 hours	every 24 hours
SJAE Particulate	every 7 days	Same	Same	Same
SJAE Iodine	every 7 days	Same	Same	Same
DEI	every 6 mo. if < 0.01 every 31 d. if > 0.01	Same Same	Same Same	Same Same
Dissolved Gas	every 31 days	Same	Same	Same
Tritium SGBD Composite	every 31 days	Same	Same	Same
Alpha	every 31 days	Same	Same	Same
Sr89,90	every quarter	Same	Same	Same
Fe55	every quarter	Same	Same	Same

Note 1: H3 leak rate and Xe leak rate are performed once per 48 hours on a staggered basis.

Note 2: H3 analysis and SJAE gas analysis are performed once per 48 hours on a staggered basis.

Note 3: Na24 leak rate is performed if Na24 is detected in the samples.