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Docket No. 50-348
and 50-364

MEMORANDUM FOR: Elinor G. Adensam, Director
Project Directorate II-1
Division of Reactor Projects - I/II

FROM: Edward A. Reeves, Sr. Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II

SUBJECT: FORTHCOMING MEETING WITH ALABAMA POWER COMPANY REGARDING THE RECENT SAFETY INJECTION SYSTEM PIPE CRACK AT JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

DATE & TIME: Thursday, January 15, 1988
11:00 a.m.

LOCATION: Room P-118, Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland

PURPOSE: Alabama Power Company (APCo) will review the recent 6-inch safety injection crack and analysis as it may relate to generic implications to PWR's. Typical questions to be discussed are attached.

PARTICIPANTS:

NRC	APCo:	SCS
S. Varga	R. P. McDonald	R. Davis et. al
G. Lainas	D. Mansfield	
C. Cheng	W. Shipman	BECHTEL
J. Richardson	J. Garlington	K. Gandahi
E. Rossi	and others	
E. Reeves		WESTINGHOUSE
A. Herdt		
E. Merchoff		D. Adamonis et al.
H. Dance		

Edward A. Reeves, Sr. Project Manager
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(MEETING NOTICE MEMO)

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

REQUEST FOR INFORMATION

We have concerns regarding the long term integrity of the safety injection and and associated piping in the Farley plants, and we need to evaluate the generic implications, including possible relationships to ongoing leak-before break analyses. For these reasons, we must determine the root cause of the crack in the Farley safety injection piping in a timely manner.

We have developed a set of questions that we feel must be addressed for us to make a technically sound evaluation of this problem. We would like these to be covered to the extent possible in a meeting to be held in the very near future. Because we have only limited information at this time, you should try to address any other relevant aspects that you are aware of, even if not covered explicitly in our list of questions.

1. What was the source of the cyclic stress that caused the fatigue failure.

2. We understand that the maximum amount of vibration picked up by the accelerometers was .1 G. What vibratory stress does this imply at the crack location? What was the frequency? Provide rationale for the elimination of strain gaging from the instrumentation program.

3. If it is assumed that the failure was caused by cyclic thermal stresses, what was the cause of the thermal fluctuations? If cold water was flowing thru the pipe, where did it come from. Why? Is this a normal condition or does it only occur infrequently? If cold water flow is the cause, was the cycling caused by thermal eddies or opening and closing of the check valve? Why are temp. measurements at upstream and downstream of check valve on loops B & C different?

4. If the failure is attributed to thermal cycling from cold water inadvertently leaking into the SI pipe, how much cold water flow is necessary to cause the problem? How could this be monitored to detect such flow? Provide isometric of piping of interest in current state for both units 1 and 2.

5. We heard some reference to concern about the adjacent check valve. What experience caused this concern? Could this relate to chatter or cyclic operation of the valve?

6. Provide status of thermal sleeves in both units. What was the root cause of the failure of the thermal sleeves? Could this be related to the crack in the pipe? If so, why are we sure that the safety injection piping in Loop B of Unit 1 is not subject to cracking?

7. Provide brief rationale on (1) why the original design provided thermal sleeves (2) why the plant can operate without thermal sleeves and (3) why you still believe (2) is appropriate.

8. If cold water flow is assumed to be the cause, we have concerns regarding the possibility of thermal cracking of the nozzle and/or the main coolant pipe itself, particularly now that the thermal sleeve is absent. This subject should be addressed, as it relates to any leak-before-break analysis.

We believe that we may need to understand the problem in considerable detail, but recognize that it may take additional time to accomplish this. The following questions represent our current thinking on the types of analyses that may be required.

1. Assuming leakage thru the check valve and stratification of the fluid between the valve and the elbow, develop the thermal and flow time-history of the fluid and the inner pipe wall in the region between the check valve and the cold leg nozzle. The effects of the flow in the cold leg past the nozzle should also be considered.

2. Assuming that the thermal sleeve protruded into the cold leg flow, evaluate the vibratory loading experienced by the region between the check valve and the cold leg nozzle.

3. Perform a fatigue evaluation of the region, including the thermal sleeve in both as-built and protruding into cold leg when subjected to both the vibratory and transient thermal load histories, and determine the cumulative usage factor. Include effects of residual stresses.