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Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509)372-5000
Nuclear Regulatory Commission October 5, 1981
Region V GO-1-81-331
Suite 202 Walnut Creek Plaza
1990 N. California Boulevard
Walnut Creek, California 94596

Attention: Mr. R. H. Faulkenberry
Chief, Reactor Construction
Projects Branch

Subject: PROJECTS 1 AND 4
DOCKET NOS. 50-460 AND 50-513
POTENTIALLY REPORTABLE CONDITION
RCS ATTACHED PIPING



- References:
- 1) Telecon TJ Houchins. Supply System to DF Kirsch, Region V Nuclear Regulatory Commission dated November 13, 1981.
 - 2) GO1-1-80-380, dated December 12, 1980, DW Mazur to RH Engelken, Director
 - 3) GO1-1-81-198, dated July 2, 1981, DW Mazur to RH Faulkenberry

In reference 1) the Supply System informed your office of a potentially reportable deficiency under 10CFR50.55(e) and references 2) and 3) were interim reports on the subject condition.

In reference 3) the Supply System committed to providing quarterly updates on the status of the subject deficiency. In keeping with that commitment, Attachment A includes the same information previously provided plus a statement as to the current status. It is still not possible to provide a final completion date for the subject design analysis; therefore, the Supply System will continue to provide your office with interim status reports on a quarterly basis.

If you have any questions or desire further information, please advise.

Very truly yours,

D. W. Mazur
Program Director
WNP-1/4

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cc: CR Bryant, Bonneville Power Administration/399 REGION V
V. Stello - Director of Inspection and Enforcement - NRC
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Attachment A
WNP-1/4
Docket Nos. 50-460 and 50-513
Reportable Condition 10CFR50.55(e)
(Potential) Reactor Coolant System
Attached Piping Second Interim Report

BACKGROUND

In GO-1-81-198 dated July 2, 1981, the Supply System provided a report on this subject to the NRC. This was an interim report on the planned reanalysis being performed on piping attached to the RCS. Commitments were also made to provide the NRC with quarterly updates on the status of the reanalysis. The purpose of this letter is in response to that commitment and appraises the NRC of our on-going program and the results to date.

DESCRIPTION OF DEFICIENCY

The original B&W ECCS analysis assumed that the piping connected to the RCS loop in which the LOCA pipe break is assumed to occur remains intact during the event. B&W had not analyzed the cold leg (for a second break), pressurizer spray and surge line, or the in-core piping to determine if these assumptions were correct. In addition, B&W recommended that the RCS attachment piping analyses under the AE's responsibility be reviewed to confirm that the basic analytical techniques used are conservative and that the piping is adequately designed to maintain function and integrity under LOCA conditions.

Since the original report, B&W has performed additional analyses and determined for the reactor coolant pump suction and discharge piping that potential breaks at the pump nozzles will not result in subsequent breaks in the reactor coolant piping adjacent to the pumps. Likewise, the pressurizer surge-line analysis has been completed and the results demonstrate that this line (attachment to hot leg piping) is not of concern. The remainder of the piping analyzed by B&W (spray line and in-core piping) is still undergoing evaluation.

The A/E for WNP-1/4, United Engineers and Constructors (UE&C), performed a review of all owners supplied RCS attachment piping and confirmed that a Loss of Coolant Accident Anchor Displacement Analysis (LAD) had been performed. Further investigations raised questions as to whether the Static Displacement Method (SDM), which was utilized in the analysis, is conservative. The original SDM analysis utilized, as input, static values over applicable LOCA breaks which contributed to the anchor displacement at the terminal end of the pipe run. Historically, this approach has been consistent with standard industry practice and was believed to be conservative. However an analysis of two lines as described below has confirmed that the SDM was not conservative and additional analyses and modifications are required.

A dynamic analyses was performed in an attempt to demonstrate that the original SDM is conservative. Using worst case time history displacements selected by B&W, a time history LAD analysis was performed for a line in the Decay Heat Removal System (DHR-4-1-14) and Main Steam System (MSS 3-1-28). The result were as follows:

1. The combined pipe stresses (including LOCA and other loadings) did not increase significantly and remained within the allowable limits.
2. Pipe support loads increased significantly, in some cases up to 30 to 50 percent. Two supports (DHR) were determined to have loadings which exceed the design allowables.
3. The component nozzle loads were also determined to increase significantly. The DHR nozzle loads exceeded B&W allowable limits, whereas, the MSS nozzle loads were within B&W allowable limits. B&W is currently evaluating the increased DHR nozzle loads for acceptability.

Although the design allowables are exceeded for the pipe supports, this loading only occurs under faulted conditions. The loadings calculated do not exceed faulted allowable loads for the supports, however, it will result in deflections of those supports. Since the original piping analysis was performed without exceeding design conditions for supports and hence, no deflection, any new analysis which assumes support deflection will result in higher values for pipe stress.

Attachment B lists the current status for all systems which must be reanalyzed to determine if modifications are required.

SAFETY IMPLICATIONS

Although the two pipe supports identified above would not fail under these revised loading conditions, the loading placed on the piping as a consequence of the support deflection could result in unacceptably high stresses which would require further modifications. It has not yet been determined that this is the case.

Since the Dynamic Analysis performed has shown a significant increase in load over the previous Static Displacement Method and the acceptability of the piping in the proximity of the two supports which have been determined to be overstressed (design allowables) cannot be assured without further analysis, this has been reported under paragraph (iv) of 10CFR50.55(e) since extensive analysis is required. Specific safety implications involving each deficiency which is found, cannot be determined until the analyses are completed.

CORRECTIVE ACTION PLANNED

As a result of analyses performed to date, it will be necessary to review/reperform analyses for all attachment piping to the RCS to determine whether design conditions are exceeded following an accident. For those cases where design allowable loadings are exceeded, it will be necessary to perform additional evaluations to determine whether hardware modifications are required.

CURRENT STATUS

Reanalyses has begun on the Feedwater System, Auxiliary Feedwater System, Core Flood System, and the Decay Heat Removal System, and should be completed before the next quarterly report. The reanalyses of the other designated systems have been held up pending resolution of the steam generator overfill study.

It is still not possible, at this time, to provide a final completion date. The Supply System will continue to provide interim reports to the NRC on a quarterly basis.

ATTACHMENT B

LOCA ANCHOR DISPLACEMENT REANALYSISPROGRESS REPORT No. 1 - 9/22/81

System	Total % of Work Completed	Remarks
MSS	25	Reanalysis of three lines is being held pending results of Steam Generator Overfill Study. For the one line completed, pipe stresses, nozzle loads and support loads increased; however, are within acceptable limits.
FWS & FWA	50	Reanalysis of all of these lines is in progress. Results will be available for next report.
DHR Drop Line	100	Pipe stresses and nozzle loads increased; however, are within acceptable limits. Due to increased loads resulting from the dynamic reanalysis, four (4) supports out of nine (9) found to be unacceptable and must be modified.
CFS & DHR (LBI)	75	Analysis of all of these lines is in progress. Results will be available for next report.
MJS (HPI)	0	Time history data is required from B & W. Reanalysis has not started.
Instrument Lines (10)	0	Time history data has been received from B & W. Reanalysis has not started.