

INSTRUCTIONS FOR ADDING REVISION 4 TO THE  
REPORT ON THE REANALYSIS OF SAFETY-RELATED PIPING SYSTEMS

The following listing will serve as a checklist for entering the attached pages into the report. The items listed in the "REMOVE" column should be removed from the report and replaced with the items in the "ENTER" column. Vertical bars (change bars) have been placed in the outside margins of revised text pages and tables to show the location of any technical changes originating with this amendment. Some pages bear a new amendment designation, but no change bars, because revisions on other pages in that section caused a text shift. A few unrevised pages have been reprinted because they fall within a run of closely spaced revised pages. No change bars are used on figures or on new sections, appendices, questions and responses, etc. Change bars from previous amendments have been deleted on pages revised by this amendment. The instruction sheet and cover letter should be filed at the beginning of the report.

REMOVE

Title Page

p 1-1

p 5-1 thru 5-2

Table 5-1 (page 6 of 7)

Table 5-2

p 6-2

ENTER

Title Page

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BEAVER VALLEY POWER STATION, UNIT 1

REPORT ON THE  
REANALYSIS OF SAFETY-RELATED PIPING SYSTEMS

FOR

BEAVER VALLEY UNIT 1  
DUQUESNE LIGHT COMPANY

ORIGINAL - JUNE 15, 1979

REVISION 4 - AUGUST 3, 1979

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Stone & Webster Engineering Corporation  
Boston, Massachusetts

SECTION 1

SUMMARY AND CONCLUSIONS

In response to the Nuclear Regulatory Commission's Order to Show Cause, dated March 13, 1979, a reanalysis is being conducted of safety-related piping systems which were originally dynamically analyzed using the SHOCK2 computer program. This program, which used an earlier load combination methodology, is no longer considered acceptable by the NRC. This report specifically addresses the return to operation for an interim period which is defined as the period during which the remaining 6 to 7 weeks of nuclear fuel in the first cycle is expended. The minor modifications required to ensure that all required pipe stresses are within licensed code allowables for the DBE case will be completed prior to startup for interim operation. Similarly, all modifications required to ensure that the stresses in all pipe supports are within acceptable allowables for the DBE case will be completed prior to startup.

Any modifications to pipe supports that are required to satisfy the OBE requirements will be made during the refueling outage that will commence as soon as the present nuclear fuel is expended.

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SECTION 5

PIPE SUPPORT RESULTS

Table 5-1 summarizes the pipe supports evaluated in the reanalysis program. There are 1060 pipe supports on lines within the interim reanalysis effort; of these, 666 have been evaluated and found acceptable and 8 have been modified to be acceptable. A support is considered acceptable if all the load components are lower in magnitude than those for which the support was originally designed. If some load components are greater than the original design load components, the support is reanalyzed using the new loads. Of the total 386 supports requiring reanalysis, all have been found to be acceptable based on DBEI+DL, or the use of one time load for snubbers.

If a support is unacceptable using either of the above approaches, a modification is required. Hardware modifications and additions are discussed in Section 6.

Support designs which are not in accordance with either of these criteria will be suitably modified against the acceptance criteria of Table 3-1 prior to interim plant operation.

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Base plate design criteria and anchor bolt pullout and shear allowable loads are addressed in Section 3. The seismic support loadings which will be utilized for the NF evaluation will be the result of either SHOCK3 or NUPIPE evaluations using SSI-ARS.

Summary

The pipe support reanalysis effort which took place between the original issue of this report and this revision includes accepting 380 supports; 193 based on DBEI+DL and 187 based on long-term criteria. Also, one additional modification was necessary for the 14" RHR line off the reactor coolant loop, one additional support was required on the 24 inch header from the component cooling heat exchangers, and one support was deleted from the river water system.

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TABLE 5-1 (Cont)

<u>System/ Problem No.</u>	<u>Total No. of Supports</u>	<u>No. Presently Acceptable Based on Reanalysis</u>	<u>No. Acceptable for Interim Operation</u>	<u>Modifications or Additions Required</u>
2031	9	9	0	0
121	15	0	14	1
122	19	0	19	0
165	1	0	1	0
152	8	8	0	0
652(*)	1	0	1	0
653(*)	2	0	2	0
<u>Main Steam</u>				
658	6	6	0	0
6590	3	3	0	0
101	4	4	0	0
659	2	2	0	0
660	7	7	0	0
3063	0	0	0	0
<u>Feedwater</u>				
204	15	15	0	0
783	9	9	0	0
784	6	6	0	0
785	3	3	0	0
261	6	6	0	0
<u>Diesel Generator Exhaust</u>				
651	2	0	2	0

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Following reanalysis of Problem No. 833, an additional snubber was designed and will be installed to alleviate a pipe overstress occurring under upset (OBE) and faulted (DBE) conditions.

Similarly, an additional snubber was designed and will be installed in Problem No. 217 to alleviate a pipe overstress occurring under the same conditions.

Three supports in Problem No. 123 will be modified, one to make the as-built condition agree with the original design, one to strengthen a marginal original design, and one to alleviate an overstressed weld in the support resulting from seismic uplift forces.

Similarly, four supports in Problem No. 653B will be modified, three to make the as-built condition agree with the original design, and one to alleviate an overstressed member in the support resulting from seismic forces.

A new support is being added adjacent to an existing support in Problem No. 270 in order to relieve a local overstress in a lug.

One support in Problem 121 is being removed to permit the remaining supports to better accommodate the system's design loadings.

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