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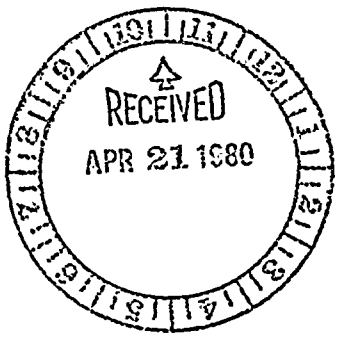
April 17, 1980

Mr. R. H. Engelken, Director
Office of Inspection and Enforcement
Region V
U. S. Nuclear Regulatory Commission
1990 N. California Boulevard
Walnut Creek Plaza, Suite 202
Walnut Creek, California 94596



Re: Docket No. 50-275
Docket No. 50-323
Diablo Canyon Units 1 and 2

Reference: U. S. NRC Bulletin 79-14
dated July 2, 1979

Dear Mr. Engelken:

This letter is written in response to the referenced IE Bulletin and supplements which require a plant inspection to verify that actual configurations of safety-related piping agree with the models used to seismically analyze them.

Our letter of October 17, 1979 submitted our response to Item 1 of the bulletin. This letter responds to Items 2, 3, and 4 for Diablo Canyon Unit 1 and is our final response for Diablo Canyon Unit 1. Review of Diablo Canyon Unit 2 and the attendant report will follow at a later date.

Items 2 and 3 call for a field inspection of as-built piping configurations, a comparison with the corresponding seismic analysis models, and a description of the results of the review. Item 2 requests that this be done for normally accessible systems, and Item 3 requests the same action for inaccessible systems. Since Diablo Canyon is not yet an operating plant all systems are accessible and no distinction was made between Items 2 and 3. Systems represented by a total of 75 piping isometrics covering all seismic Class 1 piping 2-1/2 inches and larger and 56 isometrics covering all seismically analyzed 2-inch and smaller piping were inspected by field personnel. They were instructed to yellow over items in agreement with the drawings and to mark in red all differing information. This inspection

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was completed on November 9, 1979.

Following the inspection, the isometrics were compared point by point with 192 large diameter (greater than 2-1/2 inch) piping seismic analyses and 30 small diameter piping seismic analyses. Some of the piping, such as the reactor coolant loops, was analysed by Westinghouse, which performed the 79-14 review for these systems. For each analysis, a package was prepared comparing support locations and directions, pipe geometry, valve data, material properties and other information. A list of discrepancies was compiled and each discrepancy was reviewed by a team of engineers to assess its impact and to determine an appropriate course of action. This review was completed February 15, 1980.

The following types of discrepancies are typical of those found, in order of frequency of occurrence: valve weights not correct; weights of valve flanges not modelled; center of gravity of valve operator not adequately considered; support location differences of greater than one pipe diameter; supports missing or extra; presence of high density lead foam or grout in penetrations; differences in pipe geometry; invalid assumptions in modeling of analysis endpoints; differences in insulation thickness and pipe diameter.

It was decided that 49 of the 192 large diameter analyses and 8 of the 30 small diameter analyses had differences significant enough that the results were not obviously conservative and that they should be reanalysed. This amounted to approximately a 26 percent reanalysis rate. In addition, there were 10 large diameter and 4 small diameter analyses for which differences were resolved by a field hardware change. For the Westinghouse-analysed lines, although some minor disagreements between the analysed and the as-built condition were found, Westinghouse determined that none of these disagreements were serious enough to warrant reanalysis.

Item 4 requires an evaluation of the effect of the discrepancies on system operability, a schedule for completion of reanalysis, and a description of procedures in effect to assure timely incorporation of as-built changes. The reanalysis was completed on April 11, 1980. The results of the reanalysis were as follows: Two of the analyses showed an overstress in the pipe due to the discrepancies found, and additional supports were added to correct the problem. Twelve of the analyses showed no significant increase in load, deflection or stress. The remaining 43 analyses had no problems with respect to pipe stress but had increases in support reactions. At this time, all supports which have increased design loads are being rechecked to determine whether structural modifications are needed. At present about 20 supports have been identified as needing rework. Reevaluation of supports will be completed approximately May 1, 1980. Field modifications will be finished approximately June 1, 1980.

Following completion of the review and rework, the information obtained in the field inspection will be incorporated into the design review piping isometrics. Pipe support detail drawings will also be updated to reflect as-built conditions.

Engineering procedures in force at this time require that as-built drawings of safety-related piping isometrics and pipe supports be made and be submitted to the engineering staff for review. As-built drawings are forwarded to the support designer, who checks to ensure that variations from the original design do not impair the intended function of the system or its structural adequacy. The designer then updates his records to reflect the as-built condition. Procedures also require that changes in pipe routing, changes in equipment or changes in support location in safety-related systems are not made unless prior engineering approval is obtained. Such approval is given only after applicable analyses are consulted. We feel that these procedures for as-built documentation assure that in the future there will be strict conformity between the physical configuration of safety-related piping systems and the related design documents.

Very truly yours,

Richard F. Locke

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