STRUCTURAL AND GEOTECHNICAL ENGINEERING BRANCH
EVALUATION REPORT
GRAND GULF IN-PLANT SRV TESTING

Reference: Attachment to letter from L. F. Dale of MP&L to H. R. Denton, dated July 3, 1985.

With the approval of NRC staff, MP&L was committed to a Safety/Relief valve (SRV) in-plant testing program which consists of a shake-down test, four single valve actuations and four multiple valve (4 valves) actuations. The test plan was so conceived that it would provide sufficient information to confirm the adequacy and conservatism of the analytical models used in the containment design for the effect of SRV actuations. The test data to be obtained consist of pool pressure time histories, structural and acceleration responses.

On April 23 through April 25, 1985, a series of SRV tests were conducted at Grand Gulf. These tests included one shakedown test, three single valve first actuation (SVA) each of which was followed by a consecutive valve actuation (CVA) and one multiple valve actuation (MVA) test. The optional CVA tests were performed to provide information on the effect of the most limiting SRV loading on the containment structure. The test program was suspended following the single MVA test to allow limited reduction of selected portions of recorded data and also due to the observed seat weepage of test valves. MP&L has provided to NRC staff preliminary test information based on reduction of the recorded data still in progress. The information provided in the reference consists of:

(1) Suppression pool pressure time histories for SVA, CVA and MVA of Grand Gulf. The pressure time histories for comparable locations and power spectra density (PSD) for the Kuosheng test for MVA are also provided for comparison.

(2) The maximum recorded strains for the base-mat and the containment liners.

(3) The peak measured accelerations for all tests conducted.

(4) Comparison of response spectra.

The staff has reviewed the above-mentioned information. Even though a clear cut comparison of the pressure time histories between Grand Gulf and Kuosheng is not possible due to the differences in the data reduction, some conclusion can be drawn because of the partial similarity in the general characteristics of the test results.

The maximum recorded strains as well as the peak measured accelerations are shown to be less than the design or expected values. The response spectra obtained from the SRV tests are shown to be enveloped by the design response spectra in the frequencies below 50 Hz . Also the effect on the containment structure due to MVA is the same as that due to SVA. On the basis of our review of the preliminary information as indicated above we concur with the licensee's conclusion which can be summarized as follows:

(1) Completion of the remaining SRV tests would only be of confirmatory and would not provide any new information

(2) The effect of hydrodynamic loads has been adequately covered in original design for such loads.

Therefore the licensee's request for not completing the test matrix is acceptable. However, the licensee is required to submit a finalized test report as a complete resolution of the issue. Should a final data reduction of the test results show significant deviation from those of the Kuosheng and those used in the design the licensee would be required to complete the remaining test matrix or to justify the deviations.