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SUBJECT: Provides addl info requested on details of util planned augmented insp & testing program.For discussion of testing methods & justification,refer to Attachment A of LAR 95-06 submitted on 950930.

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November 1, 1995

PG&E Letter DCL-95-241

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Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Main Steam Safety Valve Augmented Testing and Inspection Program

Gentlemen:

Upon issuance of License Amendments 108 and 107 on October 1, 1995, the NRC requested that PG&E perform augmented testing and inspections on the main steam safety valves (MSSVs) on a more frequent basis than that required by the ASME Code for at least one operating cycle. This letter provides the additional information requested on the details of our planned augmented inspection and testing program. For discussion of the testing methods and their justification, refer to Attachment A of License Amendment Request 95-06 submitted on September 30, 1995.

Augmented On-Line Testing

On-line testing will be performed as follows to assist in determining the effect of time on the tendency of the MSSVs to lift high due to apparent seat bonding.

Unit 1

Valve testing involving one steam header at a time will be conducted on a staggered test basis to provide varying time periods between header tests. It is intended that these tests provide information on the time dependency aspects of the high initial lift phenomenon observed during past on-line testing. This testing will provide a set of on-line test data for each of the five valves on each header prior to the Unit 1 eighth refueling outage (1R8). Testing to meet the requirements of Technical Specification (TS) 3.7.1.1 and the ASME Code for all the Unit 1 MSSVs will be conducted just prior to 1R8.

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If the MSSV lifts are not within +/- 1 percent, but are within +/- 3 percent (+ 3/-2 percent for the lowest set MSSVs), the valves will be reset. No test expansion beyond the five valves on the test header will be done in an effort to preserve the time related aspect of the test data. Should a valve or valves lift outside the +/- 3 percent tolerance, the valve(s) will be returned to +/- 1 percent tolerance and the scope of additional testing will be discussed with the NRC staff prior to expanding the testing.

Unit 2

MSSV tests to meet the requirements of TS 3.7.1.1 and the ASME Code will be conducted prior to the Unit 2 seventh refueling outage (2R7), which is presently scheduled to begin on March 16, 1995. Additional testing of the Unit 2 valves prior to 2R7 is not planned due to the extensive testing conducted during September 1995.

Additional Testing and Inspection Activities

The following potential causes are being evaluated as the cause or a contributing cause to the initial high lifts:

Seat to Nozzle Bonding Due to Galling

The valve and seat are made from different materials with different thermal expansion coefficients. Preliminary test results indicate that during valve heatup, the different thermal expansion coefficients cause galling between the seat and disc and subsequent microbonding of the galled material. Tests will be conducted with and without the thermal component, and will be performed using steam or an isothermal chamber. Replication of the seats will be performed before and after each test. Replication testing is a method where the topography of the surface is imprinted on a substrate (similar to scotch tape); the substrate is then processed to reverse the image and the image is magnified and photographed. The photographs are employed to determine if material from one surface is being transferred to the other. To date, the test results regarding seat galling have been inconclusive.

If seat galling is confirmed, discs manufactured from a material compatible with the nozzle, from a strength and thermal expansion coefficient stand point, will be obtained and testing will be conducted to verify that the new material prevents or significantly limits galling. The tests conducted will be similar to the tests described in the previous paragraph.

Oxide Bonding

The recently completed cold fusion test, which involved storing a valve in a loaded condition for approximately one cycle, will be evaluated to determine if there is an exchange of oxide material between the two different seating materials. In addition, the effects of steam chemistry on valve performance will be evaluated.

Additional Live Steam Testing

The following additional MSSV testing will be completed during 1R7 and 2R7 outages at the Westinghouse test facility:

1) Valve signature profiles will be determined on live steam and with the AVK test equipment.

2) The magnitude of the AVK test equipment bias will be determined.

A summary of the results of the root cause evaluation activities and corrective actions will be provided upon completion of the analyses and evaluations.

Sincerely,

Warren Fujimoto

Warren H Fujimoto

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1375S/wtr