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# PACIFIC GAS AND ELECTRIC COMPANY

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May 19, 1983

Mr. John B. Martin  
US Nuclear Regulatory Commission, Region V  
1450 Maria Lane Suite 210  
Walnut Creek CA 94596

Re: Docket No. 50-275, OL-DPR-76  
Diablo Canyon Unit 1

Dear Mr. Martin

Region V issued a Notice of Violation (Severity Level IV) on March 29, 1983 to Pacific Gas and Electric Company. Enclosed is PGandE's supplemental response to that Notice. An initial response was submitted on April 25, 1983.

Very truly yours,

*Philip A. Crane, Jr.*

Enclosure

cc w/encl: Service List

PG&E SUPPLEMENTAL RESPONSE TO MARCH 29, 1983 NOTICE OF VIOLATION

On March 29, 1983, NRC Region V issued a Notice of Violation as a result of inspections conducted from February 28, 1983 through March 4, 1983. The Notice of Violation concerned construction work performed on the Fuel Handling Building structural steel by H.P. Foley Company (Foley), a contractor to PG&E. PG&E responded to the Notice of Violation on April 25, 1983 (attached). The response included descriptions of corrective actions to be taken by PG&E as a result of the NRC inspection, as well as another inspection performed by PG&E's Quality Control (QC) Department. One corrective action described in the April 25 response specified a reinspection to be performed by PG&E of 10% of the fillet welded connections in the Unit 1 Fuel Handling Building. The 10% reinspection has been completed. This report is a supplement to PG&E's April 25, 1983 response and includes discussions of additional background information, the results of the reinspections, analysis of the findings of the reinspections, and further corrective action taken beyond those specified in the April 25 report.

In particular, the Quality Assurance (QA) and Quality Control programs for both PG&E and Foley were in effect and fully functional during the time period that the Fuel Handling Building structural steel modifications were being performed. The first PG&E QA audit of structural steel work was conducted in December, 1982. Between that time and the time that the NRC Notice of Violation was issued, the PG&E QA Department has conducted ten audits on this type of work. The audits covered such items as design package preparation and approval, qualification of inspectors, inspection records, deficiency reports, and weld rod control. Six of these audits were of the construction process and physical work, including verifying ongoing corrective actions. Specifically, between February 7 and 11, 1983, the PG&E QA

Department conducted three audits of the fuel handling building work to verify effective corrective actions from previous audits. These included reviewing qualifications of inspectors, the process of design changes, and welding problems.

The results of the audits indicated that Foley was effectively implementing its quality program, although a few of the audits indicated a concern with weld inspections. Consequently, PG&E's General Construction QC Department performed a surveillance inspection from February 17, 1983 to March 24, 1983 of structural steel fillet welds.

The surveillance inspection found various discrepancies which were documented on a Non-Conformance Report. These discrepancies agreed with or were similar to the findings of the NRC as reported in the Notice of Violation at approximately the same time. Therefore, PG&E directed Foley to perform a reinspection in the Unit 1 Fuel Handling Building of at least 10% of all fillet welds, in order to further define any welding discrepancies. Four hundred and eighty-nine of a total of approximately 3,870 fillet welds were reinspected. Four hundred and two of the reinspected welds were found to be acceptable, and 40 of the 489 welds were found to have some minor degree of variance from acceptance criteria. These minor variances were appearance deficiencies, such as rough welds, undercut that was marginally over acceptance criteria, small arc strikes and welds that were marginally below minimum size allowed by the acceptance criteria. The remaining forty-seven of the 489 welds were unacceptable. Excessive undercut, undersize welds and welds which did not have complete fusion were included in this group.

Thus, this 10% sampling program showed that about 9.6% of the reinforced welds did not meet acceptance criteria. The deficiencies could not be isolated to specific connection types, individual welders or inspectors, or locations that would have allowed pinpointing any further discrepancies. Therefore, PG&E decided to expand to a 100% reinspection of structural steel fillet welds in the Unit 1 Fuel Handling Building. The reinspection program showed that approximately 14% of the welds did not meet acceptance criteria, and all of these have been reworked to meet criteria.

PG&E has investigated the findings of the reinspection program and has determined that there are two principle causes of the structural steel welding deficiencies. The first is insufficient training of new welders and new welding inspectors, in that they did not receive sufficient familiarization with all the acceptance criteria and that strict compliance with the criteria was required. The second is an insufficient ratio of QC inspectors to production workers; this resulted from an undesirable distribution of inspectors, lack of good supervision of the contractor Quality Control group, and was to some degree influenced by the build-up in the number of workers. Additionally, it was also found that three QC inspectors had not been properly qualified.

Strong measures have been taken by Foley at the direction of PG&E to correct deficiencies with the Foley quality program. Since mid-March 1983, Foley has conducted over 30 training classes on welding and welding inspection criteria for QC inspectors, welders, and the welders' foreman. The average experience level of new QC inspectors has increased from 21 months in the January and February period to 86 months in April, with an average overall now of 50 months experience. The ratio of QC inspectors to workers has been increased

from 1 in 25 to 1 in 10. The time available for inspection by inspectors has been increased by providing more support in administrative work activities. Foley has introduced new, but strong and experienced, management into its QC/QA organization that will provide the necessary leadership to the organization. Their first action was to review all inspector qualifications and require recertification.

Further, the following additional action has been taken by Foley management. In particular, Foley is monitoring the number and activities of craft workers to be certain that the activities are fully supported by trained and qualified inspectors. This applies across the board in all areas and types of quality-related work.

To assure that any possible generic implications of the inspection findings are addressed, PG&E has directed Foley to perform a 100% fillet weld reinspection in the hot shop and Unit 2 portions of the Fuel Handling Building, and a 10% fillet weld reinspection in the Unit 1 Containment Annulus Structure for work performed from January 1983 to mid March 1983. In addition, weld work accepted by Foley inspectors who were found not suitably qualified will be sampled. This sampling will include ventilation duct support modifications and electrical raceway support modifications.

PG&E will advise the NRC, Region V, of the results of these further reinspection and sampling programs.