

PACIFIC GAS AND ELECTRIC COMPANY

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May 7, 1970

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Mr. R. W. Smith, Director
U. S. Atomic Energy Commission
Division of Compliance, Region V
2111 Bancroft Way
Berkeley, California 94704



Re: Docket No. 50-275
Construction Permit No. CPPR-39

Dear Mr. Smith:

This is in reply to your letter, dated April 7, 1970, in which you ask for comments concerning an apparent deficiency in the testing of material being used for the containment liner plate for Unit 1 at our Diablo Canyon site.

As originally filed, the Diablo Canyon Unit 1 Preliminary Safety Analysis Report identified the containment liner plate material as carbon steel conforming to ASTM A-442, Grade 60. During development of detailed design, the material selection was changed to plate conforming to the requirements of ASTM A-516, "Carbon Steel Plates for Pressure Vessels for Moderate and Lower Temperature Service," Grade 70. This change was identified in Amendment 4 to the Preliminary Safety Analysis Report for Unit 2 and will be referenced in the Final Safety Analysis Report for Unit 1.

The deficiency in preparation of liner plate test samples occurred essentially as described in your letter. This deficiency can be traced to a failure by the steel mill to transcribe accurately the purchase order of the steel fabricator, Pittsburgh-Des Moines Steel Company. For some as yet unexplained reason, the steel mill introduced into its ordering papers the requirement that test samples be normalized. The steel fabricator received a confirming order showing this requirement, but did not recognize it as an error.

Review of the test reports and other documentation was made by PG&E's shop inspection group during a routine surveillance of the steel mill. The discrepancy in the manner of sample preparation was not noted at that time. Similarly, the steel fabricator's quality assurance personnel certified the material acceptable, without noting a discrepancy, when completing the Quality Assurance Examination Check

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Sheet which accompanied the fabricated plate shipment.

The liner plates in question were delivered to the Diablo Canyon site beginning in November 1969, and by April 1970 several plates had been positioned in the containment structure and welded. In December 1969, on-site PGandE quality assurance representatives requested mill test reports in order to substantiate the Quality Assurance Examination Check Sheet which accompanied the shipment of fabricated plates. The mill test reports which were received in March 1970 revealed that the Charpy impact tests had been made on normalized samples and were therefore not representative of the plates being erected in the field.

The deficiency was discovered by PGandE quality assurance personnel and was in the process of being corrected shortly before the time of the AEC audit of March 4 and 5.

The steel fabricator proposed and PGandE accepted a plan which would provide either additional tests, or heat treatment of plates, in order to have representative tests for each plate used. The procedure consisted of the following steps:

1. The steel fabricator made a shop inventory of those pieces which had been cut from the original plates in the process of dimensional cutting before shipment to the job site. Each of the pieces remaining from the original plate had been marked when cut to identify it with the piece number, item number, heat number, ingot number, slab number and the direction of rolling. The dimensioned plates also were so identified. This identification practice had been verified by the PGandE inspector in his surveillance of shop practices.
2. The steel fabricator also made a shop inventory of plates not yet cut to dimension, which were in their original condition as received from the mill.
3. The list of cropped pieces remaining in the fabricator's shop which were large enough for removal of the required test samples was compared with the list of plates shipped. It was found necessary to take some samples from plates in the field. The steel fabricator submitted and PGandE accepted procedures for removing and replacing, where necessary, the required sample material in the field.
4. The plates which had not yet been cut in the fabricator's shop were returned to the mill where they were normalized

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to the same condition as the test samples for which the mill had issued certified test reports. The mill has certified, in a letter identifying each plate, that the process was performed. Mill records of furnace conditions were submitted to the steel fabricator by the mill for record purposes. The plates so treated meet all requirements of the original specification for normalized plate.

The principal effect of normalizing is to improve the homogeneity of the treated material. Hence, the only significant change in material properties would be in improved notch toughness. The change in yield point would not vary significantly from the range of values that would be found in different heats. Consequently, the use of normalized plates alone or intermingled with non-normalized plates is acceptable.

5. The samples from croppings available in the shop and the samples taken from plates in the field were prepared as test specimens and tested by the mill for required physical properties including Charpy impact tests. Most of these tests were witnessed by the PGandE inspector. The mill will not issue conventional mill test certificates because it did not control taking of samples; however, original or carbon copies of the data recorded by the mill technicians are on file at the mill, the steel fabricator's shop and at the PGandE job site. Testing has been completed and the information indicates that all plates meet the requirements of the specification.

Review of project quality assurance procedures in engineering, purchasing and inspection is continuing. Special consideration is being given to the adequacy of communication among the engineering groups, the contractors, and their inspection groups. Additional consideration will be given to the improvement in quality assurance from auditing material test reports, rather than certifications derived from test reports. Upon completion of this review, the quality assurance procedures of PGandE and its contractors will be revised, as necessary, to provide further assurance against recurrence of deficiencies of this nature.

Very truly yours,

Richard H. Peterson