U.S. NUCLEAR REGULATORY COMMISSION REGION V

Report Nos. 50-275/85-20 and 50-323/85-20 Docket Nos. 50-275 and 50-323 License No. DPR-80 Construction Permit No. CPPR-69 Licensee: Pacific Gas and Electric Company 77 Beale Street, Room 1451 San Francisco, California 94106 Facility Name: Diablo Canyon Units 1 and 2 Meeting at: Region V, Walnut Creek, California

Date: April 11, 1985

Prepared by:

R. T. Dodds, Chief

Reactor Project Section 1

Approved by:

Signed

D. F. Kirsch, Acting Director Division of Reactor Safety and Projects

Summary:

Meeting on April 11, 1985 to review status of certification of bolts, studs and nuts furnished to the Diablo Canyon project by Cardinal Industrial Products Incorporated.



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DETAILS

1. Meeting Attendees

NRC-RV

J. B. Martin, Regional Administrator

D. F. Kirsch, Acting Director, Division of Reactor Safety and Projects R. T. Dodds, Chief, Reactor Project Section 1

NRC-NRR

H. Schierling, Project Manager C. D. Sellers, Materials Evaluation Branch

PG&E

G. A. Maneatis, Executive Vice President J. D. Shiffer, Vice President, Nuclear Power Generation S. M. Skidmore, Quality Assurance Manager D. Aaron, Senior Quality Assurance Auditor M. R. Tressler, Project Engineering Assistant D. A. Rockwell, Unit Supervisor M. Lew, Project Licensing Engineer C. H. Nichols, Piping Engineering Group Leader

Cygna

P. D. Donato, Manager D. L. Smedley, Quality Assurance Engineer

Bechtel

H. Friend, Project Completion Manager F. C. Breismeister, Assistant Manager, M&QS J. K. McCall, Civil Supervisor

2. General

The NRC Office of Inspection and Enforcement (IE) issued IN 84-52 on June 29, 1984 to inform licensees of deficient procurement controls and quality assurance practices on the part of suppliers of nuclear materials, in which Cardinal Industrial Products was included, and to call attention to possible generic problems in procurement activities of licensees. PG&E subsequently identified Cardinal as a major supplier of bolts, studs and nuts for Diablo Canyon and had a hold placed on all materials in stock pending review and recertification of Cardinal as an approved supplier. PG&E then audited Cardinal in December 1984 and identified program deficiencies similar to those identified by IN 84-52. A subsequent audit showed that Cardinal had initiated appropriate corrective action; therefore, PG&E reinstated Cardinal on their Approved Vendors List (AVL) on March 13, 1985.

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On April 1-5, 1985 the NRC's Vendor Program Branch (VPB) performed a followup inspection of Cardinal to confirm the conduct of the corrective action program initiated by Cardinal for recertification of materials supplied to the nuclear industry. In addition, the VPB examined a sampling of purchase orders relating to the Diablo Canyon project. The following anomalies were identified with respect to these purchase orders:

- The shop travelers did not indicate that magnetic particle testing (MT) had been performed on 12 of 22 lots of A490 bolts supplied to Pullman Power Products.
- An insufficient sample size for NDE and tensile testing for two lots of A490 bolts supplied to PG&E under purchase order 4R-66170.
- Material tracability was not maintained for 48 A193-GB-16 studs for Diablo Canyon Unit 2 main steam isolation valves furnished under P.O. 577706 in January 1984.
- The A194-G4 nuts furnished for the above studs were found to have been obtained from an unapproved source in 1977.

3. Status of Licensee's Investigation

Following the NRC visit, the licensee had Cardinal conduct an extensive research of all documentation pertaining to ASTM A490 bolts, studs and nuts for the Diablo Canyon project. This effort was monitored by the licensee's representatives.

There were 46 purchase orders for A490 materials consisting of 138 line items (approximately 4000 pieces). The physical records of 40 purchase orders for 91 line items for PG&E and Pullman Power Product purchase orders were located and it was determined that all lots of material had been appropriately magnetic particle tested by Cardinal. The distribution was as follows for all items:

) 1	line	items -	acceptable MT by Cardinal
24	line	items -	acceptable MT by sub-vendor
12	line	items -	acceptable based on additional testing
5	line	items -	2-inch diameter certified A354 (MT not required)
1	line	item -	supplied by Houston Cardinal (for CCW pipe
5	line	items -	Certificates of conformance from vendor
	。	l order få	or torque wrench testing (scran)
	0	l order fo	or banded rupture restraint (removed and
		scrapped)	-
	0	1	

- l order for G row anchors for main steam and feedwater pipe supports
- 2 orders exact locations not known except not used for ASME application

Cardinal has now performed additional testing for the two lots of terial where insufficient testing had been performed for the 12 line



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items identified above with no defects identified. The error in the sample size was attributed to the inspectors selection of an AQL (Acceptance Quality Level) of 2.5 rather than 0.25 for MT testing. An AQL of 2.5 is used for visual examination for burst indications.

The NRC inspector had identified that in the original sample of 32, one defect had been identified, indicating a need for increasing the MT sample size to 100%. The review of records pertaining to that indication showed the depth of the indication, as determined by grinding, conformed to acceptance standards, considering thread depth. Therefore, this indication was not considered to be a rejectable defect.

The review of the documentation showed that only one other lot of material had been accepted by sample size, all others were 100% MT. The correct AQL had been followed for that lot of material.

With respect to the A193 studs and A194 nuts, Cardinal acknowledges that tracability was lost during the sampling of stock material and, therefore, these 48 studs and nuts will be replaced. The licensee has located 16 of the studs in stock, 24 have already been located on the Unit 2 main steam isolation valves and 39 nuts have been located. The balance will be located and all replaced by April 20, 1985, according to the licensee. In addition, the licensee has had Bechtel perform chemical and metalurgical tests and determined that the studs did indeed meet the A193 specifications based on alloy analysis, hardness tests and microscopic examination for tempered martensite. The nuts will also be analyzed accordingly.

4. Cardinal Revalidation Program

With respect to the Cardinal revalidation program, the licensee stated that Cardinal has completed 100% of PG&Es ASME 1-1/8 inch and greater certified items and 15% of the 1 inch and under in accordance with sample plan as approved by the Vendor Program Branch. No hardware problems have been identified to date. The results of that program will be reported when they become available.

5. Reporting Requirements

Because of the loss of tracability of materials requiring the replacement of the 48 studs used in the MSIVs, the licensee will be submitting a written report to the NRC. A fault analysis performed for the snubbers using the A490 bolts that were improperly sampled showed that the snubbers could telerate as many as 7 bolt failures. The licensee does not believe that the identified issues present safety concerns.





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