

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-275/84-25 and 50-323/84-17

Docket Nos. 50-275 and 50-323

License No. DPR-76

Construction Permit No. CPPR-69

Licensee: Pacific Gas and Electric Company
77 Beale Street
Room 1435
San Francisco, California 94106

Facility Name: Diablo Canyon Units 1 and 2

Inspection at: Diablo Canyon Site, San Luis Obispo County, California

Inspection conducted: July 9-13, 1984

Inspectors: W. J. Wagner 8-9-84
W. J. Wagner, Reactor Inspector Date Signed

Approved by: D. F. Kirsch Jr. for 8-9-84
D. F. Kirsch, Chief Date Signed
Reactor Projects Branch

Summary:

Inspection during the period of July 9-13, 1984 (NRC Inspection Report Nos. 50-275/84-25 and 50-323/84-17)

Areas Inspected: A special, unannounced inspection by a regional-based inspector to investigate allegations regarding NRC assessment of the Pullman Power Audit Program during the period of August 1971 through December 1973.

The inspection involved 46 inspection-hours by one NRC inspector.

Results: Of the areas inspected no violations or deviations were identified.

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DETAILS

1. Individuals Contacted

a. Pacific Gas and Electric Company (PG&E)

D. A. Rockwell, Project Field Engineer
J. Arnold, Resident Engineer
F. Russell, Resident Engineer
I. L. MacDonald, Inspector

b. Pullman Power Products (Pullman)

H. Karner, QA/QC Manager
J. Guyler, Internal Auditor

2. Purpose

The purpose of the inspection was to determine the validity of allegations which conclude that the NRC inspection on April 2-4, 1984 to examine audit records during the period of August 1971 through December 1973 does not provide an accurate assessment of the PG&E and Pullman audit programs.

3. Background

NRC Inspection Report Nos. 50-275/84-16 and 50-323/84-06 documents a NRC Region V special inspection to examine audit records of Pullman Power welding activities performed during the time period of August 1971 through December 1973. The purpose was to determine the extent to which Pullman and PG&E had implemented an adequate audit program. That is, that the audits of Pullman welding activities were thorough and conducted in accordance with an approved Pullman QA Manual.

4. Pullman QA Program 1971-1972

The QA program utilized by Pullman (The M. W. Kellogg Company) for Contract Spec. 8711 is described in "The M. W. Kellogg Company Quality Assurance Manual - Field Procedures" issued on 2-22-71. This QA Manual was also used for pipe supports along with ESD-223 prior to December 1973.

This QA Manual was approved for all work performed under Contract No. 22-C-8711-0. Originally this work included (a) Piping to Contract Spec. (C.S.) No. 8711, (b) Pipe Supports to C.S. 8711 and (c) Main Steam and Feedwater Piping to C.S. 8707. C.S. 8711 was approved by PG&E on February 6, 1970, and C.S. 8707 on July 29, 1969.

On October 17, 1972 a Field Change Order was issued to M. W. Kellogg Company (also referred to as Pullman) authorizing additional work to Contract No. 22-C-8711-0 for installation of pipe rupture restraints

performed to C.S. 8833XR. Approved exceptions to C.S. 8833XR, such as using QA requirements of C.S. 8711, are discussed in this report.

5. Allegations, Concerns and Related Subjects

a. Review of PG&E Audit No. 73-15

PG&E Audit No. 73-15 was conducted to verify that the pipe hangers and rupture restraints are fabricated, furnished and erected in accordance with the specification and the PG&E and M. W. Kellogg Quality Assurance Manuals. The audit concluded that "MWK's Quality Assurance program does not comply with Section 4 of Specification 8711 and Procedure PRP-4." This conclusion was derived at as a result of evaluating the audit team's finding that "MWK's approved QA Manual complies with Section 4 of the Specification (8711). The Manual, however, does not specifically address itself to, nor is it completely applicable to, control of pipe hanger and restraints." Therefore, the conclusion was directed at the lack of a QA program specifically for the fabrication and erection of pipe hangers (supports) and rupture restraints.

This audit resulted in the issuance of a stop work order on installation of Class I hangers, revision of ESD-223, and a Discrepancy Report PG&E No. M-254. The Discrepancy Report resulted in a 100% inspection, and rework as necessary, of all supports and restraints installed prior to revision of ESD-223. Also, a separate QA Manual for pipe hangers and rupture restraints was approved and issued.

It should be noted that Pullman welding, such as welder qualification and filler metal control, related to pipe hangers and pipe rupture restraints were in compliance with the Pullman QA Manual for ASME Section III piping.

Audit 73-15 stated that "the program set forth in ESD-223 does not meet all the requirements of Section 4 of the specification (8711)." Section 4 of C.S. 8711 establishes the contractor QA requirements which requires the contractor to define his QA program by a quality assurance manual. Since the QA Manual for piping did not specifically address pipe supports and restraints the auditor then audited ESD-223 for compliance to Section 4 of C.S. 8711. ESD-223 is an engineering specification which sets the quality requirements and procedures for Class I pipe supports. It was not intended to serve as a QA Manual, although it does specify applicable sections of the MWK QA Manual for piping, such as KFP-12 Control of Filler Metal and KFP-15 Welding Qualification, which apply to ESD-223.

The corrective action taken that resulted in the stop work order, 100% reinspection, revision of ESD-223, and issuance of a new QA Manual for supports and restraints, was adequate.

Section IV of audit 73-15 revealed that MFI-2 did not specifically address themselves to the surveillance of pipe hangers and restraints, and that the inspector was not performing the

inspections. MFI-2 is the Mechanical Resident Engineer's instructions to the mechanical department's field engineers and inspectors for surveillance of materials during use and/or installation. These inspectors are not QA or QC inspectors. The mechanical group initiates these instructions for their engineers and inspectors for performance of their duties while monitoring contractor work activities. This is not significant from a quality assurance standpoint because these activities are not part of the Pullman or PG&E QA/QC program. New Mechanical Field Instructions, MFI-2-7 and 2-8 were written and implemented describing the mechanical department's inspector's duties for inspection on pipe hangers and rupture restraints.

b. QA Program Comparison

The inspector reviewed the quality assurance requirements of C.S. 8711 and C.S. 8833XR. The purpose of this review was to ascertain if there were any differences in the QA requirements that could be considered less restrictive than the other. This review and comparison revealed that the two QA program requirements, Section 4 of C.S. 8711 and Section 3 of C.S. 8833XR, are the same. That is, both specifications require the contractor to have a QA organization, a QA procedures manual, and QA inspection and test plans. The QA Manual requirements of both specifications have identical criteria for procedures to be included in the manual. There are no unique differences between the two QA program requirements.

c. Allegation:

"The bottom line is that audits performed by Pullman based on its QA Manual (KFP's) and audits by PG&E's Mechanical Department were not applicable to Pipe Hangers and Pipe Rupture Restraints during the August 1971 to December 1973 period."

The statements reference to the Mechanical Department are not accurate. First, the Mechanical Department did not perform audits of QA/QC inspections. Second, the inspections performed were to monitor the contractor's work to assure that the fabrication and erection requirements of the applicable specifications were met.

This was not a QA/QC program activity. The MFI's were instructions that outlined the Field Engineers and inspector's (not QA or QC inspectors) duties, responsibilities and requirements to properly perform inspection duties on pipe hanger and rupture restraints.

It is true that audits performed by Pullman based on its QA Manual (KFP's) were not applicable to Pipe Hangers and Pipe Rupture Restraints during the period of August 1971 to December 1973. Audit No. 73-15 states that the QA Manual complies with the Section 4 QA requirements of C.S. 8711; however, their QA Manual does not specifically address itself to the control of pipe hangers and restraints. Therefore a new QA manual was written specifically addressing pipe supports and restraints. However, audits of welding activities performed on supports and restraints were thoroughly

conducted in accordance with the QA Manual (KFP's) which was an ASME approved QA Program meeting the strict requirements in accordance with the provisions of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers.

d. Allegation:

"A major fallacy in the PG&E audit program in the 1971 to 1973 period was the Pipe Rupture Restraints were audited against PG&E Spec. 8711." The allegor states that Spec. 8833XR is the applicable spec. for auditing Rupture Restraints not Spec. 8711.

On October 17, 1972 PG&E issued Field Change Order No. 94 to Contract No. 22-C-8711-0 for authorization for extra work to furnish labor and material for installation of pipe rupture restraints. On November 8, 1972 PG&E issued a letter to M. W. Kellogg stating that the rupture restraints to be erected by M. W. Kellogg, as authorized by Field Change Order No. 94, will be completed according to the criterion shown on the attached memo. The attached memo of October 18, 1972, referenced by the allegor, was a request for approval to erect restraints under spec. 8833XR with some exceptions, that is, different criterion. Criterion D was that restraints will be subject to a Quality Assurance Program in accordance with Spec. 8711 Section 4.

The reason for this decision was that work was already being performed by Pullman under Spec. 8711 for piping and pipe supports, and the restraints were similar in materials and configuration. Therefore, since Spec. 8711 and Spec. 8833XR had the same quality requirements, and Pullman was already working and familiar to the quality requirements of Spec. 8711, the decision was made to work to the same quality program rather than generating a new program.

The work performed under Field Change Order 94 did not apply to large diameter piping. Field Change Order No. 306 of October 18, 1976 authorized Pullman to install Main Steam and Feedwater support steel in accordance with the quality requirements of Spec. 8833XR. To meet these requirements Pullman organized a new group dedicated to performing work applicable only to pipe rupture restraints, as authorized by F.C.O. No. 306.

e. Concern:

"Per C.S. #8833XR Pullman was scheduled to begin erection of Pipe Rupture Restraints in Unit 1 on 7-8-72. Yet it would be 16 months before an Internal Audit would be performed on the program. Again this audit would reveal that C.S. #8711 was being used in conjunction with C.S. #8833XR for the installation of restraints."

Although Spec. 8833XR scheduled Pullman to begin erection of pipe rupture restraints in Unit 1 on 7-8-72, the Field Change Order No. 94 which authorized this was not issued to Pullman until 10-17-72 with work beginning on 10-19-72. This was for unloading of material, followed at a later time by installation. This does not

appear to be significant since the majority of restraints installed prior to 1974 were bolted as opposed to welded connections. The use of Quality Assurance requirements specified in C.S. #8711 was properly approved as discussed in Section d. of this report.

f. Allegation:

"Yet the most significant aspect of this audit was that it revealed there was no Quality Assurance Manual available for the control of installation of restraints. Installation was controlled by a 'letter approved by A. G. Walters on October 19, 1972.' "

The QA Manual used to install restraints did not specifically address restraints although it was an approved QA Manual. This discrepancy was identified in PG&E Audit No. 73-15 (refer to earlier discussion on this audit in Sections a. and c.).

The letter referred to by the allegor was an inner-office PG&E memo from Construction to Engineering requesting approval for four exceptions to erect restraints under spec. 8833XR. The approval was granted by the appropriately qualified individual Mr. A. G. Walters the PG&E Lead Piping Engineer on 10/19/72. These exceptions which represent new criterion was transmitted to the Pullman Project Manager.

g. Allegation:

"PG&E's C.S. #8711 and C.S. #8833XR to Pullman makes no reference or commitment to Safety Guide 28, ANSI N45.2-1971 or 10 CFR 50 Appendix B."

This allegation is true.

Specs. 8711 and 8833XR do not reference or commit to S.G. 28, ANSI N45.2-1971 or 10 CFR 50 Appendix B. These QA requirements were not in existence until after contract 22-C-8711-0 was issued. However, review of the contractors' QA requirements specified in Section 4 of C.S. 8711 and Section 3 of C.S. 8833XR revealed that they do meet the intent of S.G. 28, ANSI N45.2-1971 and 10 CFR 50 Appendix B in effect during the time period 1971-1973.

10 CFR 50 Appendix B was first issued in the Federal Register on July 27, 1970. This was after issuance of Contract No. 22-C-8711-0. The QA requirements of C.S. 8711 and later C.S. 8833XR were tailored after the Draft of Appendix B of April 1969. The licensee indicated that this approach to their development of the QA requirements was reviewed and approved by the Appeal Board.

h. Allegation:

"Therefore the conclusions reached by the NRC Inspection are not applicable to Pipe Hangers and Rupture Restraints"

The conclusions reached by the NRC inspection on April 2-4, 1984 are applicable to Pipe Hangers and Rupture Restraints. The purpose of the inspection was to determine the extent to which Pullman and PG&E had implemented an adequate audit program of Pullman welding activities during the period of August 1971 through December 1973.

Welding activities such as control of filler material and welder qualifications, are in compliance with the Pullman QA Manual which during 1971-1973 addressed piping only. The fact that the QA Manual for piping did not specifically address pipe supports and restraints does not mean that these welding activities were not performed in accordance with an approved QA program. The basic Pullman Company policy regarding quality assurance was compiled in accordance with the requirements of Section III of the ASME Boiler and Pressure Vessel Code 1971 Edition and 1971 Addenda. This policy was applicable to the QA Manual for piping, and also to the QA Manual for pipe supports and restraints approved on 12-7-83.

i. Allegation:

"The current QA program description still does not make a commitment to 10 CFR 50 Appendix B, ANSI N45.2 series or ASME Section III."

This allegation is partially true.

The allegor references PG&E Audit 80422 and makes direct quotes from it. The allegor statement that the QA program does not make a commitment to 10 CFR 50 Appendix B or ANSI N45.2 is true. There are no federal or ANSI requirements that require a contractor with a previously approved QA Program to commit to the new regulations.

In regards to ASME III commitment the allegor's statement is not true. Audit No. 80422 states "Pullman's program also commits to the ASME Boiler and Pressure Vessel Code (CODE), 1971 Edition for quality assurance requirements. The 1971 code is consistent with the requirements of 10 CFR 50 Appendix B."

j. Allegation:

"PG&E would direct Bostrom-Bergen Metal Products to establish QA requirements to the wrong contract specification."

Review of PG&E correspondence to Bostrom-Bergen indicate that the QA requirements are those outlined in specification 8831R. There appears to have been some confusion by Bostrom-Bergen as to what Quality Assurance requirements were applicable to their work, i.e. those requirements outlined in Specification 8831R or 8833XR. However, PG&E letters and memos generated from September 1974 through January 1975 were specific in stating that the Quality Assurance requirements of Specification 8831R rather than 8833XR were applicable.

k. Allegation:

"The Pipe Rupture Restraint Crack Repair Program was the result of inadequate corrective action to poor preheating practice."

Inadequate preheat was a contributing cause. Other factors contributing to the problem were massive weld sizes and highly restrained joints. The original preheat temperatures met the minimum AWS D1.1 requirements, however, for the factors already mentioned and for the material used, part of the corrective action was to increase the preheat temperature.

3. Conclusions

- a. Audits performed by Pullman of hanger and restraints based on Pullman's QA Manual for piping are valid even though pipe hangers and pipe restraints were not specifically addressed in the QA manual.
- b. Contract Spec. 8711 used in place of C.S. 8833XR for auditing pipe rupture restraints for compliance with QA requirements is acceptable and in accordance with the Field Change Order authorizing the work.
- c. The conclusions of the NRC inspection of April 2-4, 1984 remain unchanged; that is, that audits of Pullman welding activities were thorough and conducted in accordance with the Pullman QA program during the period of August 1971 through December 1973.