Shollenberger

File
Diablo Canyon

PACIFIC GAS AND ELECTRIC COMPANY

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JAMES D. SHIFFER
VICE PRESIDENT
NUCLEAR POWER GENERATION

October 30, 1984

PGandE Letter No.: DCL-84-343

DESIGNATED ORIGINAL
Certified By Dot Noack

Mr. J. B. Martin, Regional Administrator
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

ATTN: Mr. D. Kirsch

Re: Docket No. 50-275, OL-DPR-76
Docket No. 50-323
Diablo Canyon Units 1 and 2
Responses to Allegations

Dear Mr. Martin:

NRC Region V letters dated August 28 and October 22, 1984, forwarded a number of allegations for PGandE's evaluation, investigation, and response. On October 18, 1984, PGandE responded to the subject matter of 65 of these allegations. Enclosed is PGandE's response to the remaining allegations identified in those letters. PGandE believes that the evaluations and investigations conducted resolve these allegations for both Units 1 and 2.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

for J. D. Shiffer

Enclosure

cc: G. W. Knighton
H. E. Schierling
Service List

"for release to PDR"
H005

84-411

ENCLOSURE

The following allegations are addressed in this enclosure:

71[illegible]	911	1221	1310
753	915	1223	1311
758	917	1225	1312
77[illegible]	925	1241	1313
778	1435	1242	1314
787	927	1408	1315
781	937	1459	1317
792	938	1243	1318
795	939	1245	1319
801	944	1246	1320
802	945	1247	1321
803	946	1248	1322
805	949	1249	1324
812	950	1250	1333
814	954	1257	1334
817	955	1265	1339
818	971	1275	1340
822	977	1276	1341
841	981	1281	1342
842	994	1282	1346
843	995	1283	1347
844	1008	1284	1348
849	1026	1290	1349
855	1055	1305	1350
856	1061	1306	1351
857	1117	1307	1352
869	1199	1293	1353
875	1456	1294	1354
933	1200	1295	1355
934	1201	1296	1360
982	1211	1299	1361
904	1212	1301	1362
906	1213	1304	1363
907	1215	1308	1406
908	1216	1309	1409
			1467

0112s/0023K

NRC Allegation #0715

Allegation Description:

Pre-1981 "as-built" review were performed without specifications (rebuke previous PGandE response).

This subject was previously addressed in response to Allegations III-42 and III-38 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegations and responses are attached hereto.

III-42

It is alleged that:

13. "Weld installation reviews performed early in the design verification program (1981) consisted of reviewing all available as-built information and performing plant walkdowns to obtain additional information."

Response: The "as-built" of 1981 and previous "as-built" performed by Pullman were performed without any universal standard or specification, by untrained and sometimes unqualified inspectors. This process did not provide enough accurate information to adequately assure a comprehensive repair program. (See, e.g., use of meaningless terms for engineering work, such as "heavy weld", that came out of the walkdowns. Page , supra.) (Undated Anon. Aff., Attachment 5, at 13.)

This allegation consists of unsupported opinion. The issue of "heavy weld" was addressed above (III-38). The Pullman personnel performing as-built reviews are qualified in accordance with ESD 235 and 237. The process is conducted using the universal standards found in ESD 223. These procedures were applicable long before 1981.

III-38

It is alleged that:

9. There is "[r]egular communication between engineering and construction personnel on weld design and intent."

Response: To my knowledge, the only such regular communication has been between the "Quick-Fix Engineer", and a "Field Engineer" on specific problems with hangers in question on an as needed basis, not on a scheduled basis. In most instances only the "engineers" involved with the problem would have an intimate knowledge of the solution.

Historically, the inadequate communication left a pathetic record. In one instance, a Bechtel team member "as-built" a support. He was apparently untrained in welding symbols and inspection. This is evidenced by his report stating "heavy weld all around". How can you factor "heavy weld all around" into a hanger stress calculation, or assure that it has an "effective heavy throat?" No one communicated to us what was intended. You just had to guess.

The contentions identified in this rebuttal are sufficient to confirm that communication between department managers is still lacking also. (Undated Anon. Aff., Attachment 5, at 11-12.)

The Project's response was not meant to imply regularly scheduled meetings in a formal environment. The regular meetings referenced were, in fact, the very ones the alleger acknowledges from his own experience.

The "heavy-weld all around" example cited does not support a lack of communication. This note was placed on the drawings before the "Bechtel team" was even on the job. This issue was previously responded to in PGandE letter DCL-84-166 to the NRC, dated April 30, 1984, page 89:

During the Project's Corrective Action Program, certain pipe support as-built drawings were found to contain incomplete weld descriptions, such as the example "Heavy-weld all around." When an incomplete weld description was found, the support was analyzed assuming the weld did not exist; or, if it was necessary to include the weld in the analysis, a documented reinspection was performed to accurately describe the weld. This follow-up documentation was incorporated in the design calcuations and as-built drawings. Contrary to the allegation, the analysis was proper.

NRC Allegation #0753

Allegation Description:

AWS inspector stamps issued to non-level II inspectors, i.e. to level I inspectors.

NRC Allegation Paraphrase:

HP Foley issued AWS stamps to inspectors who were not level II inspectors.

Contrary to the allegation, Howard P. Foley Company (Foley) has not issued AWS stamps to Level I or Level II inspectors. Although AWS issues stamps and certification documentation to inspectors who have successfully passed the AWS welding test examinations, "AWS stamps" are neither permitted nor used onsite by any Foley employee.

It is true, however, that prior to April 1983, Level I and Level II inspectors were issued identification stamps. The identification stamps issued were not AWS stamps, but were part of the Foley certification program, and they were used only for identification purposes. There was no difference between a Level I or Level II stamp, nor was there a level indicated on the stamp.

Since April 1983, Foley has issued identification stamps only to Level II inspectors. The Level I inspectors who had previously been issued identification stamps were required to return their stamps to management. The Foley certification program has been audited by numerous groups and has been found to be in compliance with Foley's Quality Assurance Manual.

NRC Allegation #0758

Allegation Description:

Hanger #24-20R-welds on lug attachments are not as specified.

NRC Allegation Paraphrase:

Hangers #24-2 and/or #24-24R, welds on lug attachment are not as specified. Hangers are on recirc charging pump, CCW supply and return lines.

The welds on lug attachments for hangers #24-2 and #24-24R were originally welded in 1976 per PGandE drawing 051360. Drawing 051360 called for a full penetration weld on the lug attachments. When the welds were made, each was inspected and found to be acceptable per drawing 051360.

In early 1984, the hangers were inspected in preparation for the modifications to be performed as part of the verification program. The modifications called for a full penetration weld with a 3/16-inch fillet cap on the lugs. Although the welds in question had originally been accepted, the inspector was required to reverify the earlier work. Due to the fillet cap on the original weld, the size of the full penetration weld could not be verified.

The matter was referred to OPEG for engineering review. OPEG determined that the 3/16-inch fillet cap alone would meet design requirements without the full penetration weld. Thereafter, the work was completed, the as-builts were submitted to San Francisco engineering for approval, and approval was received.

NRC Allegation #0776

Allegation Description:

Visual inspection of the first weld pass was missed 10% of the time.

NRC Allegation Paraphrase:

(Atkinson) alleger vault audit found inspection reports missing visual inspection sign off of first (root) pass, 10% of the time.

Field Erection Inspection form FE-1, as described in GFACo Quality Control Procedure QCP-3, "Structural Steel Erection," lists the specific inspection items to be documented in sequence for each specific weld. These include "weld preparation and fit-up," "first pass/10 percent inspection," and "visual inspection" (completed weld). If any missing item on form FE-1 could not be verified by contact with the responsible QC inspector, the missing information would be documented through an NCR and corrective action could include reinspection, removal of the weld, or acceptance as-is after review.

Considering the sequential nature of the inspection requirements on form FE-1, it is improbable that any inspection point would be missed with a greater than random frequency, certainly not the 10% rate indicated in the allegation.

NRC Allegations #0778 and 0787

Allegation #0778 Description:

Inspections were documented "after the fact".

NRC Allegation Paraphrase:

(Atkinson) inspections on weld records in vault were documented "after the fact", from inspector's memory. Sometimes months later.

Allegation #0787 Description:

Inspections were backfit, such as visual inspection after the fact - too late, can't verify.

NRC Allegation Paraphrase:

Atkinson inspections were back-fitted for work that was not fully documented right the first time. Sometime the flaws were in the missing inspection area. A visual inspection after it's finished is too late.

Field Erection Inspection form FE-1, as described in GFACo Quality Control Procedure QCP-3, "Structural Steel Erection," was used to document bolting and welding inspections for each connection. Each form FE-1 was filled out over the duration of the weld, not necessarily on the same shift by the same inspector. In those cases where a form FE-1 was incomplete, either during the welding sequence or as determined by documentation review "in the vault," the responsible QC inspector or lead inspector for the area in which the weld was located would be contacted. If the inspection action could not be verified, the incomplete or missing information was either verified through reinspection or documented through an NCR. Corrective action could include further reinspection (e.g., NDE), removal of the weld, or acceptance as-is after review. Inspections were either documented as they occurred or within a reasonable period of time thereafter.

NRC Allegation #0781

Allegation Description:

QC problems were handled informally, by memo from night shift to day shift.

NRC Allegation Paraphrase:

Atkinson QC problems were handled informally, by memo from night shift to day shift. There was no formal feedback to nightshift, no way to really report back.

This subject was previously addressed in response to NRC Allegation Nos. 403, 422, 423, and 424 (paragraphs 162, 163, and 164) submitted in PGandE letter DCL-84-195 dated May 29, 1984. The previous allegations and responses are attached hereto. Paragraphs 162 and 163 of the previous response discuss the use of memoranda by swing-shift personnel as a basis for communication between the swing-shift personnel and day-shift QC supervision. "Review by QC supervision ensured that consistent answers or interpretations for all potential deficiencies...were always provided." There was no requirement that a formal system be in place and the system in effect involving the use of memoranda, albeit informal, provided an effective system for communication between shifts which was found to be acceptable and to the satisfaction of virtually all individuals using the system.

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NRC Allegations #[illegible] #422, #423 and #424

It is alleged that:

12. I was instructed to report QA violations through memoranda, and not to use the formal nonconformance reporting system. My supervisor would decide if the memorandum should be written up. This kept the NRC from seeing the issues I raised. Everything was a private affair between the boss and myself.

9. The last day of my employment with Atkinson I observed and reported welds that failed my inspection at about a 60% rate, due to deficiencies such as grossly undersized legs, gross undercuts and rollover notches on the horizontal edges of the welds. There was so much slag in the undercuts that I had to clean the welds just to see what was there. The worst problem was that these welds had already been QA-accepted. I looked at 100-150 welds up half of one side of the fuel handling building, which means that 60-90 bad welds previously had been accepted by my supervisor.

10. I did not report the 60-90 bad welds in the fuel handling building on a formal nonconformance form. Instead on QA manager Mike Anderson's direct orders, I submitted the results to him on one sheet, with no copies.

11. The reason for the informal quality report on the fuel handling building welds is that Mr. Anderson already had signed off to accept the welds which I just inspected. He had accepted the welds without looking closely at them a few weeks before the end of Atkinson's contract. He explained to me that he had walked the line but hadn't bent down. (Hedrick Aff. at 5.)

162. GFACo used a nonconformance reporting system which was established in GFACo Quality Assurance Procedure QA-15 and Quality Control Procedure QCP-9. Possible problems or nonconformances identified by QC inspectors were brought to the attention of QC supervision either through verbal contact or through written notes, sketches, and memoranda. QC supervision reviewed each item in relation to the PGandE specification, code, and QC procedures. When appropriate, GFACo Project Engineering

would be consulted and design questions would be presented to PGandE for guidance, interpretations, and answers. At any point in this review by QC supervision a formal NCR could be initiated after verification that an item was, in fact, deficient or nonconforming.

163. The use of memoranda was especially important as a basis for communication by swing shift personnel to day shift QC supervision. Review by QC supervision ensured that consistent answers or interpretations for all potential deficiencies, including determination of actual NCRs, were always provided.

164. In addition, Mr. Hedrick had alternative routes to present any quality concern that he believed was not adequately addressed. He could, and in fact did, communicate directly with the swing shift PGandE inspector. He could, but never did, communicate directly with the GFACo offsite QA representative or with PGandE QA representatives, and he could, but to PGandE's knowledge did not, communicate directly to the NRC any such quality concerns during the time of his employment with GFACo.

165. The incident referred to in Allegations 422, 423, and 424 relating to fuel handling building welds took place at the conclusion of the GFACo contract. Pat Palomo, PGandE field engineer, identified unacceptable welds in the fuel handling building and communicated this problem to GFACo. Mr. Hedrick was directed by the GFACo QA Manager, Mr. Anderson, to inspect the welds and make a list of any that were unacceptable as the basis for an NCR.

166. The unacceptable welds were identified by Mr. Hedrick and were documented on GFACo NCR 331, which was initiated on August 28, 1979 (Mr. Hedrick's last day on the project was August 24, 1979). This NCR specified that H. P. Foley Co. was to perform and document all weld repairs after GFACo had left the site. GFACo work in the fuel handling building which was incomplete (including NCR 331) was listed in the turnover of documentation to PGandE which in turn assigned the work to H. P. Foley Co. GFACo NCR 331 was superseded by Foley Inspection Report 54-22-1. Reinspection and rework/repair were completed by Foley on October 9, 1979.

167. No further corrective action is required.

NRC Allegation #0792

Allegation Description:

Poor drawing control in Pullman and Atkinson.

NRC Allegation Paraphrase:

Audit of drawings in Pullman, Kellogg and Atkinson, on keeping current revisions on file, revealed poor drawing control.

An earlier, more specific allegation received from Mr. C. Stokes pertaining to his concern that the quality of Pullman's work was seriously compromised by lack of effective drawing control was answered at length in response to Allegation III-63 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegation and response are attached hereto.

The general nature of the instant allegation does not allow a similarly detailed response. The allegation infers that Pullman, Kellogg, and Atkinson did not keep their drawings updated to the latest revision. This is not true. Since the beginning of the Diablo Canyon Project, drawing audits of contractors and PGandE disciplines have been conducted to ensure that the latest revisions to the construction drawings are being used.

In view of the effectiveness of the drawing audits, no corrective action is required.

III-63

It is alleged that:

Another generic failure at Pullman that I think has seriously compromised the quality of Pullman's work is the lack of effective drawing control, and therfore [sic] inadequate control of the design of the plant. The drawings issued to the field for work often needed modifications that were outside the tolerances allowed by Pullman's procedures, the ESD's. To accomplish these design changes, a system called "Quick Fix" - later changed in Unit 1 to Pipe Support Design Tolerance Clarification - was instituted. The Quick Fix form is filled in by a Pullman field engineer and then cosigned by a Bechtel field engineer. Thus the quick fix was a change of design made in the field. The basis for these design changes was strictly a matter of the engineering judgement of the field engineers as to what seemed like it would work. There was no requirement for any load or stress calculations.

The situation is made worse by the manner in which Quick Fixes are often prepared. Often they were hand drawn under poor conditions, and were in many cases impossible to interpret. The Quick Fix program was designed to expedite construction, and therefore there was pressure to write Quick Fixes hastily.

Practically every drawing issued would require at least one Quick Fix, and I have seen as many as thirty-five Quick Fixes for a single hanger. This can make interpretation very hard, because several Quick Fixes could address the same item and describe different solutions. Some would supersede and void portions of the drawing or of other Quick Fixes, but it was difficult or, at times, impossible to clearly understand what was intended.

At times, a complete redesign occurred thorugh the use of Quick Fixes. The Quick Fix became the design, but they were not controlled nor were they stamped as approved for construction as the original drawing was required to be indicating that they were controlled copies, ready for use in construction.

Presumably, the completed work was submitted to PG&E for reanalysis. However, because of the often confusing nature of Quick Fixes, and the lack of control, I doubt that the drawings submitted to PG&E accurately reflect what exists in the field.

I feel that considering the conditions and pressures that we are [sic] required to work under, anything less than a clear and precise drawing to work from is bound to promote mistakes and faulty workmanship, and to leave the ultimate quality of the installed work as a big question mark. (3/21/84 Anon. Aff., Attachment 9, at 6-8.)

Contrary to the allegation, design modifications which occurred by means of the Pipe Support Design Tolerance Clarification (PSDTC) program were accomplished by use of controlled documents and a controlled process. Regardless of whether the initial design solution to a construction problem was hand-drawn, the final installation was as-built, received QC and QA inspection, and was verified according to procedure by Engineering to ensure that the "front-line" solution met design and licensing criteria.

It is true that there were occasions when the design issued to the field needed modifications which exceeded the limits of the authority granted to Pullman as set forth in its procedures. In such cases, proposed modifications were initiated by the Pullman field engineer and reviewed, approved, and numbered by the PSDTC engineer.

It is true many PSDTCs were hand-drawn; however, hand-drawn drawings were clear and explicit. Mr. Stokes claims that many of these drawings were impossible to interpret; however, the craftsmen had no problem interpreting the drawings and constructing the hangers in accordance with the PSDTCs.

It is also true that some drawings required multiple modifications for a single hanger. However, all PSDTCs that affected a large bore hanger were assembled and transmitted along with the final as-built drawing to San Francisco for final design acceptance. Pursuant to procedure, Pullman field engineers prepared as-built drawings of the hangers based upon all the information contained in the hanger package, including all PSDTCs. The as-built drawing was then verified against the actual as-built condition in the field by Pullman field engineers, and the final as-built drawing was verified by Pullman QC and QA. This ensured that all PSDTCs that affected a large bore hanger were accurately described on the final as-built drawing sent to SFHO for engineering review.

Contrary to the allegation, Pullman effectively controlled PSDTCs and prepared final as-built drawings for small bore hangers. The final drawings were prepared by the Pullman field engineers to ensure that they accurately depicted field conditions. Quality Control then verified in the field that the drawings accurately depicted the field conditions. The Pullman Quality Assurance review group then verified that the final document package contained the original design and all PSDTCs to ensure that each item that required a PSDTC was documented in the final hanger package. The installed hangers received two individual as-built inspections in addition to a final Quality Assurance review to ensure that all design information was recorded. Following all reviews, all necessary load-or-stress calculations were

performed when Project Engineering received the final as-built drawing for final as-built evaluation. The only difference between the small and large bore process was that the final large bore hanger package sent to SFHO for engineering review contained the PSDTCs and the final as-built drawing; whereas, the small bore package sent to OPEG for engineering review contained only the final as-built drawing without the PSDTCs.

Contrary to the implication in the allegation, there was no requirement to stamp the PSDTC as approved for construction because the very existence of the signed-off PSDTC meant that the change was approved for construction.

Mr. Stokes fails to recognize the totality of the PSDTC program which ensures that all changes receive the same level of engineering review and approval as a design originating in San Francisco and continues to focus on his narrow role in the process.

NRC Allegation #0795

Allegation Description:

Work not performed in accordance with ESD's.

NRC Allegation Paraphrase:

Pullman work was not performed in accordance with ESD's. Having the specification, procedures, and the prints, and drawings does not guarantee that the emphasis was placed on all portions of the specification. There were whole areas of job involvement where particular portions of the specifications were just flatly ignored.

Contrary to the allegation, particular portions of the specifications were not "flatly ignored." The ESDs were originally developed based upon contract specifications. All work is required to be performed in accordance with the ESDs. In some instances, it has been found that an ESD, as written, did not adequately address the conditions in the field. When this occurred, a different solution was proposed, reviewed, accepted, and utilized in accordance with approved procedures set forth in the ESDs.

If and when work is found not to be in accordance with appropriate ESDs, the deviation is documented on Deficiency Condition Notices (DCNs) or Discrepancy Reports (DRs) and accepted, if appropriate, or reworked as necessary. All work performed, and the related documentation, have been subjected to Pullman QA, internal and corporate audits, PGandE audits and surveillance inspections, third-party inspection by the ANI, ASME audits, and the NRC. At no time have any of the above groups identified that the ESDs have been intentionally ignored, or that there have been "whole areas of job involvement where particular portions of the specifications were just flatly ignored."

NRC Allegation #0801

Allegation Description:

QC could not reject work.

NRC Allegation Paraphrase:

Regarding Atkinson work in 1978, QC could not always reject work. There was a particular gusset plate up in the turbine building roof that was garbaged, the inspector, foreman and welders wanted to tear it off and install a new plate. The inspector rejected it and hung a red tag on it, which bounced. Atkinson production management spent three more days working on the subject plate before they gave up and replaced it. Six man days of work could have been saved, if original rejection of work was accepted.

This allegation was previously addressed in response to Allegation III-66 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegation and response are attached hereto. In relation to paragraph 14 of the previous allegation, it should be noted that "tagged" work, i.e., work not meeting specification requirements, could, as a field option, be either repaired or replaced. In the example cited in the allegation, the plate was replaced after repair efforts failed.

III-66

It is alleged that:

14. At management instructions production crews ignored and/or removed hold tags I had issued. In fact, production crews worked for three days on the welds in one case. In that instance even the production foreman supported my reject tag because he knew the welds could not pass ultrasonic testing (UT) examination. Even the welder wanted to hang a new plate. The techniques were so poor that lack of fusion was a near certainty. But management overrode the reject tag. (See July 28, 1978 swing memorandum, enclosed as Exhibit 4).

15. Another instance where production crews removed the hold tags is described in the March 8, 1979 swing memorandum, enclosed as Exhibit 5. Production didn't take any metal out or remove the weld as they should have. Instead, crews just ground it down so you wouldn't know that a weld was there.

16. During the summer of 1978 the hold tag log book was falsified to erase any reference to a hold tag I had handwritten. Consistent with usual practice I had issued and logged in by hand hold tag 026 one evening. The hold tag involved a violation that occurred from damage when an erection aid was removed from a gusset plate. In the process, about 1/4 inch divit had been ripped out from the base metal when the erection aid was broken off. The next day after I filed my entry in the log the secretary took that page and on a new page typed the entries up to my hold tag 026. Then she stopped and returned the typed version to the log. Eventually, someone else logged in a new hold tag 026. Mine vanished. To my knowledge the violation was not fixed. A copy of the relevant log page is enclosed as Exhibit 6. (3/9/84 Hedrick Aff. at 6.)

The general subject of how "Hold" and "Reject" tags which were used to control questionable or rejectable work has been previously discussed in responses to NRC Allegations #408, #409, and #410 which were filed with PGandE letter DCL-84-145, dated May 29, 1984. As paragraph 14 of Mr. Hedrick's allegations appears to use "Hold" tag and "Reject" tag interchangeably and the circumstances associated

with the specific welds are therefore not clear, it is impossible to respond to this allegation in detail. However, under no circumstances was a generic management directive issued to ignore any such tags issued by Mr. Hedrick.

Mr. Hedrick implies that once a "Hold" tag is issued, it may never be removed by anyone other than the inspector who originally placed the tag. This is untrue. In certain specific cases, if the welds were in progress and could be ground out and rewelded such that they would pass a UT examination, the decision to continue with the welds (rather than cutting them out and starting over) was valid. In all cases, a "Hold" tag could be removed after a determination of an appropriate course of action or the acceptability of the existing weld. Such a determination could only be made in conjunction with QA and/or Engineering. The ultimate acceptability of the welds would be indicated on an inspection form signed by a QC inspector.

Paragraph 15 of Mr. Hedrick's allegations relates to "Hold" tags associated with excessive weave and oversized welds. These concerns were addressed in response to NRC Allegation #420 (Mr. Hedrick's Paragraph 7) which discussed the generic resolution of excessive weave and oversized welds. Further, as described in response to NRC Allegation #416 (Mr. Hedrick's Paragraph 3), the identified excess welding was ground down in preparation for UT inspection in accordance with previously defined and accepted procedures.

Mr. Hedrick's allegation that "the hold tag log book was falsified" was refuted in PGandE's response to NRC Allegations #408, #409, and #410. That response indicated that "Apparently, Mr. Hedrick's 'Hold' tag was incorrectly entered in the 'Reject Tags Issued' log and subsequent correction of the log deleted this incorrect entry." There were no requirements for the listing of a "Hold" tag unless such a tag resulted in a nonconformance report (NCR). Had Mr. Hedrick's "Hold" tag met this criteria and had it been entered in the proper log, "NCR Hold Tags Issued", it would not have been deleted. The work tagged by Mr. Hedrick, as described in Exhibit 6 of his affidavit, was likely determined by the day shift QC supervisor to be work in progress and approved methods and procedures for repairing the base metal existed. Thus, the tag was removed and the required work performed.

Therefore, all of the activities of "management" addressed herein were conducted in an appropriate manner.

NRC Allegation #0802

Allegation Description:

QA/QC not independent from production.

NRC Allegation Paraphrase:

Atkinson QA/QC was not independent from production in 1978. The base level inspector could not get a reject to stick without production management giving final approval.

Contrary to this allegation, GFACo Quality Control has always been independent from production. This independence of QA/QC and production was delineated in the GFACo QA program for the Diablo Canyon Project. In those cases where production field supervision had disagreements with quality control inspectors on the acceptability of an item, either individual may have elected to pursue the disputed item with his supervisor and/or PGandE. In most instances, the field QC inspector's original findings were either upheld, or permission was obtained from the responsible PGandE design engineer to accept an item as-is. In some cases, the design engineer redesigned the item if it was possible to eliminate additional construction work without adversely impacting plant safety or if the required rework had the potential to result in further nonconformances.

NRC Allegation #0803

Allegation Description:

QC inspector never found out disposition of NCR.

NRC Allegation Paraphrase:

Atkinson QA/QC inspector did not find out disposition of all Non Conformance Reports (NCR's). Sometimes an inspector who had written an NCR in 1978 would be shoved off onto another assignment, and his bosses would say "we will deal with this".

Contractor NCRs may require several months to disposition, especially if engineering analyses or re-design work is required because of the nonconformance. GFACo QC supervision would work with GFACo project engineering and PGandE to develop a proposed disposition of the nonconforming item. Final approval of the disposition was the responsibility of PGandE. After approval was obtained from PGandE, the NCR was returned to GFACo QA/QC with the approved disposition. By this time, it could well be that the QC inspector who had initiated the NCR had been reassigned to other work. The QC inspector working in the area where the nonconformance existed at the time the NCR disposition was approved would then follow up and sign the "Corrective Action Verification" on the NCR when the disposition was completed.

NRC Allegation #0805

Allegation Description:

There was no in-house system to report problems observed outside of QC inspector's responsibility.

NRC Allegation Paraphrase:

In 1978 Atkinson had no in house system to report problems observed outside of QC inspector's assigned responsibility. If an Atkinson inspector perceived a problem on the work site and his boss said it was not a problem, there was not an established method for documenting the subject problem and submitting it into a system where somebody other than his boss could take a look at it, and decide if the problem needed to be repaired or addressed.

Contrary to the allegation, there was an in-house system for reporting problems observed outside of the QC inspectors' assigned responsibility. In response to the requirements of 10 CFR 21, a memorandum dated October 27, 1978, was issued to "All GFACo Quality Assurance Personnel" setting forth a statement on reporting of failures and defects. GFACo Quality Control Procedure QCP-9 addressed the reporting of nonconforming items to PGandE and the Nuclear Regulatory Commission. Reporting requirements were not limited to the inspectors' assigned area of responsibility.

NRC Allegation #0812

Allegation Description:

Defect in gusset plate (in turbine building on the centerline of the roof in the lower cord).

NRC Allegation Paraphrase:

In 1978 a defect (divot) in gusset plate (in turbine building on the center line of the roof in the lower cord) had been hold tagged. The Atkinson inspector's hold tag was removed twice by other Atkinson inspectors/personnel who did not inspect same area identified on tag as defective. When erection aids were pulled off the gusset plate, a 1/4 inch deep (a third of the way through the plate) divot was left on the back side of the plate, big enough to stick your thumb in. Divot is probably still in plate today.

This allegation was previously addressed in response to Allegation III-06 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegation and response are attached to NRC Allegation #0801 above. The alleger merely presumes the defect is still present. However, the prior response at page 3 indicates regular procedures were followed and "...the tag was removed and the required work performed." Such work would be subsequently reviewed by QA for a determination of its acceptability.

NRC Allegation #0814

Allegation Description:

Pullman-stainless electrodes came out to field cold in a rod oven, but it was not plugged in.

NRC Allegation Paraphrase:

Pullman-stainless electrodes came out to field in a rod oven, but it was not plugged in. Electrodes came to the field cold from the weld requisition area and were not required to be put in a rod oven and kept at a temperature that would prevent the moisture from entering the coating.

All stainless steel electrodes are maintained in heated rod storage ovens before being issued for field work. Section 4.4 of ESD 202, a copy of which is attached, shows that these electrodes are not required, and never were required, to be maintained in a heated condition while in the field. Upon completion of the shift (i.e., no longer than 12 hours), the electrodes are returned to the heated storage oven. The NRC has specifically approved the Bechtel electrode control program which permits austenitic stainless steel electrodes to be issued in unheated containers.

This level of control is sufficient for austenitic stainless steel filler metal, which is not subject to hydrogen cracking as is carbon steel. Moisture absorbed into electrode coverings may be dissociated to form hydrogen in the welding arc. Metallurgically, austenitic stainless steels are not susceptible to hydrogen cracking; therefore, extensive measures to control moisture pick up in electrode coverings is unwarranted.

The primary symptom of excessive hydrogen in austenitic stainless steel weld metal is porosity. All Pullman welds have met the code acceptance requirements for porosity (i.e., rounded indications).

Pullman Power Products

FOR INFORMATION ONLY

PREPARED BY: K. M.	APPROVED BY: R. Karner	SECTION NO. DATE: 12-21-78
DIABLO CANYON PROJECT PROCEDURE	TO BE USED ONLY ON JOB# 7177	PAGE NO. 3 of 7

Low hydrogen electrodes shall be maintained in the portable ovens while in the field. If the ovens cannot be plugged in at the work location, the welder may remove a sufficient quantity of electrodes to perform welding. In no case may electrodes be out of the heated oven more than four (4) hours. Electrodes exposed more than four (4) hours shall be returned to the rod room where they will be discarded by the Q.A. Inspector (rod room).

7-16-84 4.4 Stainless electrodes shall be maintained to assure a clean, dry condition while in the field. Portable ovens may be used for field storage. It is not required that stainless electrode be kept hot.

4.5 Bare wire and inserts shall be kept clean and dry.

4.5.1 Stainless materials shall be wiped with acetone and a clean dry rag prior to use.

4.5.2 Carbon steel materials shall be wiped with a clean dry rag prior to use. If there is evidence of contaminants such as oil, grease or moisture, the clean rag wipe shall be preceded by an acetone wipe.

4.6 The welder or fitter picks up the weld materials at the start of the shift, and takes it to the work station. If at any time the oven becomes inoperable during the shift, he shall return it immediately to the rod room and secure another oven.

4.6.1 If during the shift different type or size materials are required for the same weld, the foreman shall be advised. He shall indicate on the white copy of the requisition the number, type and size of additional rod required and initial the change.

Additional material will be issued and shall be returned to proper storage immediately. Additional material of the same type and size may be issued without the foreman's initials. The Q.A. Inspector (rod room) shall enter the number of additional rod and time issued on the rod requisition.

6-29-83 4.6.2 At the end of the shift the welder or fitter shall return the storage container, all unused materials, and stubs to the rod room. He shall count the returned material and stubs and enter the number in the space provided on the requisition, white copy. Stubs shall be deposited in a receptacle provided for them. All damaged electrodes shall be destroyed.

NRC Allegation #0617

Allegation Description:

Pullman Power Products welding engineer provided false statement that code does not have rejection criteria for porosity when welding with coated SS electrodes for shielded metal arc.

NRC Allegation Paraphrase:

Pullman Power Products welding engineer provided a false statement that the code does not have rejection criteria for porosity when welding with coated SS electrodes for shielded metal arc.

The allegation refers to a memo dated November 3, 1983, from Pullman Welding Engineer Chris Neary to Assistant QA/QC Manager Frank Lyautey, a copy of which is attached. While it is true that the codes do have acceptance criteria for rounded indications, i.e., porosity, the memo was not intended to convey incorrect information. The Neary memo was meant to indicate, and should have explicitly stated, that the applicable codes (i.e., ANSI, B31.1, B31.7) have no visual rejection criteria for porosity. Porosity on weld surfaces, in addition to being visible, is readily detected by liquid penetrant examination, and subsurface porosity is revealed by radiography. It should be noted that all Pullman Power Products welding has complied with the visual and NDE acceptance criteria, and that porosity in stainless steel welds has not been a major reason for the repair of welds.

INTEROFFICE CORRESPONDENCE

DATE November 3, 1983

TO Frank Lyautey

FROM Chris Neary

SUBJECT Effect of Moisture on Stainless Steel Welding Electrode

A review of available information on the subject, including reports from Bechtel, has been completed.

Exposure of stainless steel welding electrode to the ambient atmosphere for up to 12 hours will have no significant effect on weld quality.

Furthermore, stainless steel welds are not being subject to hydrogen cracking as are carbon steel. Excessive hydrogen will only result in porosity in the weld.

Porosity is a innocuous condition in stainless steels (the code has no rejection criteria for porosity). If excessive moisture pick up by the electrodes was wide spread, I am sure you would have received many reports on porosity in stainless steel welds.

Based on the above information, it is my opinion that the current practice for handling of stainless steel electrode has not had an adverse effect on weld quality.

C. M. Neary
QEG Welding Engineer

CMN/lam

cc: File

NRC Allegation #0818

Allegation Description:

Mishandling of coated stainless steel electrodes could possibly contribute to intergrandular stress corrosion cracking-Pullman.

NRC Allegation Paraphrase:

Pullman Power Products mishandling of coated stainless steel electrodes could possibly contribute to intergranular stress corrosion cracking.

No specifics are given in this allegation, but it is assumed that the alleged mishandling of electrodes is related to the references in allegations #814 and #817. This allegation would then appear to be that Pullman permitted the presence of hydrogen which, in turn promoted intergranular stress corrosion cracking (IGSCC). This assumption is inaccurate for the reasons that, for IGSCC to occur:

1. A chromium depleted region must exist in the material. Hydrogen does not deplete chromium or adversely affect the metallurgical structure of austenitic stainless steel.

2. A tensile stress must be present in the material. This stress will not be affected by the presence or absence of hydrogen in austenitic stainless steels.

3. A corrosive material must be in contact with the stainless steel. The presence of hydrogen does not affect this condition.

Therefore, the presence of hydrogen during welding with stainless steel electrodes will not contribute to any increased potential for IGSCC and the allegation is without basis.

NRC Allegation #0822

Allegation Description:

Foley weld rod control does not give verification to welder that right amount of rod turned in.

NRC Allegation Paraphrase:

Foley weld rod control does not give verification to welder that right amount of welding rod was turned in.

The allegation is correct that Foley weld rod control does not give verification to the welder that the right amount of welding rod was turned in. There is no verification because there are no code or procedural requirements that require a welder to be notified that the right amount of welding rod was returned. However, welding electrodes are controlled and accounted for. The weld rod control attendant is required to monitor the amount of weld rod distributed and returned and document any deviations in accordance with Foley Quality Procedure QCP-3. Since the Foley program accounts for weld rod used by each welder, the fact that this figure is not double-checked by the welder is of no consequence.

NRC Allegation #0841

Allegation Description:

Geologists did not do an adequate job of identifying the rock that the plant is built on and the fractured nature of it.

NRC Allegation Paraphrase:

Geologists did not do an adequate job of identifying the rock that the plant is built on and the fractured nature of it.

Contrary to the allegation, PGandE performed extensive geological studies of the site, including excavation of a large area by trenching down to bedrock, prior to the inception of the initial design and construction efforts (refer to FSAR section 2.5). The studies accurately identified the fractured nature of the sandstone rock upon which the plant is constructed and were reviewed and accepted by the AEC Staff and its consultants prior to issuance of the Construction Permit in 1967.

NRC Allegations #0842, 0843, and 0844

Allegation #0842 Description:

The core drillers drilled through a 16000 volt bus bar.

NRC Allegation Paraphrase:

The core driller had drilled through a 16,000 volt bus bar, and just missed killing their crew. They were lucky. They just happened not to be touching the equipment. It was a near disaster, and nearly killed the two operators of the concrete core driller. This was somewhere in the turbine pedestal area. A bus bar was going through the concrete, embedded.

Allegation #0843 Description:

PGandE blueprints not verifiable with revisions so unchecked and uncontrolled that they don't know what they have out there.

NRC Allegation Paraphrase:

PGandE blueprints not verifiable with revisions that are so unchecked and uncontrolled that they do not know what they have out there. Drilling through the 16,000 volt bus bar came about because nobody knew that the bus bar was even there. Their plans, their blueprints, did not show it. And it just seems amazing that a company like PGandE can lose a 16,000 volt bus bar, electricity-making being their own business. And it just shows me that a problem with the blueprints not being verifiable, and the revisions that have taken place over the years, that had gone on so unchecked and uncontrolled that they do not know what they have out there. And it would be damn near impossible to verify anything off the plans, especially if it was encased in concrete. If you could not see it, you could not be assured that there was anything inside that.

Allegation #0844 Description:

PGandE did not repair bus bar after it was drilled into.

NRC Allegation Paraphrase:

PGandE did not repair the bus bar after it was drilled into.

The allegation that core drillers drilled through a 16,000 volt bus bar in the vicinity of the turbine pedestal, and just missed killing the crew, is blatently false. In fact, there is no 16,000 volt source at the site.

Records show that while drilling holes for the turbine pedestal post tensioning, the Continental Drilling Company accidentally severed a 1000 MCM ground grid in two places on the EG620.11 grid line. The ground grid is not an energized conductor and there was no danger to the personnel involved.

The cable was first cut on February 20, 1979, and again on February 23, 1979. Inasmuch as it is a ring grid and no ground stations were isolated when the grid was cut, permission was granted by the responsible engineer to leave the grid unrepaired and to show the grid damage on the applicable drawing (PGandE drawing 57620).

Contrary to the allegation, PGandE blueprints showed the location of the ground grid. However, the ground grid is non-Class I and the location shown on the blueprints is approximate. Continental Drilling set up its drilling rig on the turbine deck at the 140-foot elevation and was drilling to approximately the 50-foot elevation. The ground grid was severed at elevations 74 and 60 feet. Although the ground grid is horizontal, it changes elevation between the two points to follow the configuration of the turbine pedestal foundations. Continental was allowed a 1-1/2% tolerance in their hole drilling. At the depth the ground grid was first struck, it was permissible for them to be off line by approximately 15 inches. It was the

combination of the approximate location of the ground grid on the drawing and the drilling tolerance allowed Continental that contributed to the severance of the ground grid and not any defect in the drawings or drawing updating process as alleged.

There is an effective program in place to assure that all drawings associated with Diablo Canyon are correct and up to date and therefore the concerns with drawing accuracy expressed in the allegation are unfounded.

NRC Allegation #0849

Allegation Description:

There was no method to ensure that bolts weren't being reused.

NRC Allegation Paraphrase:

There was no method to ensure that structure bolts used in the turbine building were not being reused in 1978/1979. The alleger stated that the improper reuse of A-490 material bolting was in the roof of the turbine building.

GFACo Quality Control Procedure QCP-3, paragraph 6.10, specifically stated that A325 and A490 bolts will not be reused after they have been removed:

> "A325 and A490 high strength bolts which have been removed may not be reused as part of the permanent structure, unless otherwise specified by PGandE. Retightening previously tightened bolts which may have been loosened by the tightening of adjacent bolts will not be considered as a reuse."

Paragraph 6.9.2 of QCP-3 stated:

> "Bolts which have been tightened will be spray painted (prior to inspection) by GFACo personnel to verify that work has been completed."

Further, Paragraph 6.12.3 of QCP-3 stated:

> "Bolts which have been accepted by the GFACo Quality Assurance Inspector will be spray painted to verify acceptance of the work with a contrasting color other than the color used in Paragraph 6.9.2 of this procedure."

If there had been any accidental or potential reuse of A325 or A490 bolts, the bolts would have been easily identified by the paint marks. Painting of these bolts was witnessed by GFACo QC inspectors and, in most cases, by a PGandE inspector. Therefore, by this method, previously used bolts would have been easily identified and their use prevented.

NRC Allegation #0855

Allegation Description:

Welders taking their test sometimes took a week. The test should take only 4 hours.

NRC Allegation Paraphrase:

Atkinson welders taking their test sometimes took a week. The test should take only four hours in the test booth.

The AWS Code does not specify either a minimum or maximum time for welders to complete their tests. The Diablo Canyon Project average for ironworker welder qualification testing varied from 1 day to 2-1/2 days. In some cases, a welder may have taken up to a week if he also had to qualify a procedure which was not prequalified by AWS in conjunction with his welder qualification tests.

Additionally, multiple qualifications, e.g., for other positions and for other processes (such as flux cored arc welding), add to the time in the welder qualification test booth.

NRC Allegation #0856

Allegation Description:

Only 1% of the welders taking the test failed it. 15-20% would have been more realistic.

NRC Allegation Paraphrase:

Only 1% of the Atkinson welders taking the weld test failed. 15 to 20% would have been more realistic. The emphasis was getting the man on the payroll, and not what he could really perform in the actual field conditions. The test was a roadblock that did not stop many.

Welder qualification tests were conducted either in Fresno by a PGandE-approved testing laboratory (Twining Laboratories) or at Diablo Canyon. A bend test, as described in AWS D1.1, Rev. 2-77, was used as the basis for welder certification. Also, ironworkers who were tested generally had previous welding experience. In addition, many of the GFACo weld tests were to qualify a previously qualified welder in a new or different process or position. Under these conditions and circumstances, the failure rate was low, but probably not as low as the alleged 1%.

NRC Allegation #0857

Allegation Description:

When 35% of the stiffener plate welds failed they were repaired using the same procedures that they were initially installed by.

NRC Allegation Paraphrase:

When 35% of the stiffener plate welds failed, they were repaired using the same procedures that they were initially installed by. There would be a failure in some aspect of the weld, brought about by improper procedures. An example would be inattention to pre-heat on the massive sections of steel that were sometimes welded. Weld failures were more on the massive steel where the tensions could be developed inside the many layers of weld, and the shrinkage forces could accumulate enough to have a weld fail. We had a real massive involvement of weld failures on the column stiffener plates on the turbine building walls, the columns that hold up the roof and the crane rails. These columns had stiffener plates inserted on both sides of the column at intervals. I will say two to three foot intervals up the column. The program that I am mentioning is a go back and repair program, when it was detected that the stiffener plates were -- the welds were cracking from the ends of the welds working in. I think I could lay a percentage of those stiffener plates that we had fail in one way or another, due to the cracking problem, as about 35%. That kept us busy for another four months, repairing those. However, they were repaired to the same procedures and methods that were used to install them in the first place. Management had two optional methods to weld the stiffener plates in the columns. One method was single bevel partial penetration weld. The stiffener plates were three-quarter inch thick and welded to a three-quarter inch web of the column, and two-inch flanges on the column. The second method specified optionally in the drawings was a double fillet weld, a fillet weld on each side of the plate. The fillet weld option would be the most likely to succeed, for the reason that the opposed fillet welds would balance the stresses, and the welds required less volume of filler metal to be added. A quip the alleger heard from a welder assigned to the job, who thought that approach would lead to problems that would require a lot of expensive rework and repair -- I think that management chose the worst option in the interest of a little economic rape of PGandE.

This subject was partially addressed in responses to NRC Allegations #382 and #402, paragraph 113, submitted in PGandE letter DCL-84-195 dated May 29, 1984. The previous allegations and responses are attached hereto.

While 35% of stiffener plate welds did not fail, 21.2% did, and a problem did exist. A reinspection of stiffener plate welds showed magnetic particle (MT) indications on the welds, including some cracking. MT indications are frequently due to surface contour, residual magnetism, and other spurious sources not related to weld defects.

The weld configuration involved in the allegation was extremely stiff, providing, as pointed out by the alleger, high residual stresses leading to some cracking. In the majority of instances the cracking or other weld indication was sufficiently small that the indication could be ground out without the necessity of rewelding. In accordance with the disposition approved by the responsible design engineer, it was unnecessary to replace this ground out portion of the weld and plate.

Methods for weld repairs were shown on GFACo drawing number 2227-S-V-13-E-101, Revision No. 4, dated July 3, 1979. All work was shown as "QA as-built" on August 13, 1979, and signed by Mr. Donald Hedrick. The QA documentation indicates that all repair work on the column web stiffeners took place between June 5, 1979, and August 13, 1979, which was approximately 2-1/2 months, not the 4 months as alleged.

Three options were given for welding the stiffeners: full penetration weld; a partial penetration weld; or a double fillet weld. The partial penetration weld was selected by the contractor for both technical and economic reasons. Welding of the partial penetration welds is done in the flat or down hand welding position. The double fillet weld option calls for horizontal and overhead, out of position, welding, requiring many small beads that is more difficult to perform and generally more costly. The full penetration weld option requires a backing plate which makes it at least as costly as the double fillet weld option and requires more time than the partial penetration weld. With the additional advantage of lowered production costs and time required for partial penetration welds in the flat or down hand welding position, both GFACo and PGandE concluded that the partial penetration weld option was the most cost-effective and time-saving method which met the design requirements.

The alleged inattention to preheat is without merit. Preheating was performed in accordance with GFACo quality control procedures. The subject of preheating is addressed in more detail in response to NRC Allegations #383, #384, #385, and #440 submitted in PGandE letter DCL-84-195 dated May 29, 1984. These allegations and responses are attached hereto.

In the present instance, the alleger has identified an example of how an effective QA/QC program uncovered a problem with proper corrective action being taken, and not an uncontrolled process as the alleger would lead one to believe.

NRC Allegations #382 and #402

It is alleged that:

34. In some cases, illegally-performed informal weld repairs covered up initial deficiencies whose effects will remain as dormant hazards. To illustrate, crews welded over broken tack welds, which is illegal under the code and specifications. You have to fix or remove a broken tack weld. If you weld over it as is, there is no guarantee that the broken tack weld will be completely incorporated into the new weld. Cracks from the tack weld can then repropagate into the new welding. (Hedrick Aff. at 10.)

33. The effect of uncontrolled weld repairs was to destroy weld quality in some cases. For example, use of the wrong weld technique created uneven stress on certain stiffeners. This createdso (sic) much excess tension that there were instances where people working in the vicinity could hear the welds pop. (Hedrick Aff. at 10.)

112. Welding technique, by itself, does not cause uneven stress problems and certainly, by itself, cannot avoid cracking problems in highly restrained joints. Difficulties in welding restrained weld joints at Diablo Canyon were identified in NCRs. Welding sequence changes and weld size changes are frequently necessary to weld highly restrained joints. Broken tack welds are frequently corrected by making larger size tack welds.

113. The welds described by Mr. Hedrick were made on stiffner plates which were installed on the exterior columns of the turbine building. The stiffeners were installed inside flanges on heavy columns with groove welds on three sides after tack welding of the stiffener plates to the columns. The tack welds (erection aids) broke (popped) on the side opposite the production weld being made. These tack welds and the final welds were addressed on PGandE NCR DCO-79-RC-002 and Guy F. Atkinson Company (GFACo) NCR 245. A memorandum (Request for Modification) from GFACo to PGandE, dated December 6, 1978, described the breaking of tack welds on these stiffener plates and the requirement to repair all cracked tack welds before incorporation of the tack weld into the final weld. The accepted solution of this tack weld cracking problem for new welds was to tack weld the stiffener plates on the back side so that the tack weld was not included in the production weld and so that the tack weld appearance met AWS D1.1 code. In addition, existing tack welds were repaired so that they could be included into the production welds. There were no illegally performed informal weld repairs since tack welds and repairs were performed in accordance with approved procedures. Repair work on the cracked tack welds that were identified in NCR 245 required QA documentation. Verification of the corrective action including documentation was signed off on the NCR. There is no evidence to indicate that there were any tack welds that were not repaired as required by GFACo procedures and AWS Code.

114. No further corrective action is required.

NRC Allegations #383, #384, and #385

It is alleged that:

35. For an extended period during 1979 the inspection program only poorly enforced the preheat specification program, when at all. The problems identified were due to the initiative of the night shift inspectors. (Hedrick Aff. at 10.)

36. Our initiative was only partially successful. While the inspection procedures for preheat treatment were upgraded, the change only applied prospectively to work in progress. Any welding already done and inspected without preheating was home free. (Hedrick Aff. at 11.)

37. I was concerned about inadequate preheating for steel greater than two inches thick. The specs require preheating when the steel is more than 1.5 inches thick. Unfortunately, in some cases there was no evidence of preheating or of any temperature monitoring in other instances. (See e.g., January 9, 1979 swing memorandum enclosed as Exhibit 10). (Hedrick Aff. at 11.)

115. Contrary to these allegations, preheating, as required by PGandE specifications, GFACo welding procedures, and the AWS D1.1 code, was always required for Specification 5422 work performed by GFACo. The PGandE specifications required that welding be in accordance with AWS D1.1, 1977, which requires for plate thickness greater than 1-1/2 inches and up to 2-1/2 inches, a minimum preheat temperature of 150°F. For plate thickness greater than 2-1/2 inches, a minimum preheat temperature of 225°F was required. In January 1979, GFACo started welding the thicker sections and preheating was monitored with Temp Sticks to ensure that procedure requirements were met. GFACo and PGandE QC inspectors and all welders were issued Temp Sticks to assist in ensuring that the proper preheat temperatures were met.

NRC Allegation #440

It is alleged that:

Soon after that, I noticed a welder on a scaffold, doing welding that required pre-heating and the maintenance of the proper interpass temperature. But I could tell that he was doing neither of these, because there was no oxyacetylene hose running to his work station. So I climbed up the scaffold with a temperature "crayon" to check the temperature, and found that he was in violation of the minimum temperature requirements. (3/21/84 Anon. Aff., Attachment 8, at 3.)

223. A QC inspector's responsibility included monitoring of preheating and interpass temperature control to ensure that welders were within the ranges specified in welding procedures. The incident described in the Anon. Aff. paragraphs 9-11 (i.e., removal of welding that had not been done in accordance with approved procedures) indicated that the QC inspector was performing his assigned duties and reconfirmed that QC was enforcing the specification requirements. (Refer also to the response to NRC Allegations #383 to #385 on preheating of welds.).

224. As no specific details have been provided, only a generalized response is possible. If we assume the welder was correct and preheat was not required, then the QC inspector was overly conservative. If we assume the QC inspector was correct regarding the need for preheat, the QC inspector was properly performing his job and the quality program was properly functioning. Had this been other than an isolated occurrence, the QC inspector should have questioned the welder's qualification and had him reassigned as discussed in the response to Allegation #397.

NRC Allegations #0869, 0875, 0933, 0934, and 0982

Allegation #0869 Description:

Field inspectors didn't know nor were they legally able to reject bolts that were defective per ASTM A-490, ASTM-325 and ANSI N18.2 requirements.

Allegation #0875 Description:

Defects in A-490 bolts had been found after the bolts had been "dedicated" by PPP/QA receiving department and sent to field for installation.

Allegation #0933 Description:

Pullman inspectors were specifically instructed to only consult Pullman procedures for evaluations-prevent from performing as an ANSI N45.2.6 Inspector.

NRC Allegation Paraphrase:

ESD 243 had no rejection criteria for bolts. An employee came upon a situation where there were bolting defects, and he needed to reject them. There was no Pullman criteria to reject the bolts, so the employee attempted to find that criteria. Because he was allowed to only use Pullman procedures, the employee did not have the latitude to fulfill his job as an inspector, which requires evaluation of a component's ability to meet quality objectives.

Allegation #0934 Description:

Pullman procedure ESD 243 has no rejection criteria for bolts defects in 490 bolts - longitudinal quench cracks.

NRC Allegation Paraphrase:

ESD 243 had no rejection criteria for bolts. An employee came upon a situation where there were bolting defects, and he needed to reject them. There was no Pullman criteria to reject the bolts, so the employee attempted to find that criteria. Because he was allowed to only use Pullman procedures, the employee did not have the latitude to fulfill his job as an inspector, which requires evaluation of a component's ability to meet quality objectives.

Allegation #0982 Description:

A490 bolts defective with longitudinal quench cracks and forging laps on the head.

NRC Allegation Paraphrase:

Defects in A490 bolts had been found after the bolts had been "dedicated" by PPP/QA receiving department and sent to field for installation.

The inspection and use of A490 bolts are related subjects and have been previously addressed in PGandE Response to Joint Intervenors' Motion to Reopen on CQA, dated March 19, 1984, Karner et al., Aff. at 18-20 (JI 126), and Geske et al., Aff. at 21-22 (JI 118), and in responses to Allegations No. V-39 and V-44 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegations and the applicable portions of PGandE's responses are attached hereto.

The bolts in question are manufactured in accordance with the requirements of ASTM Standard A490. The manufacturer inspects, as necessary, to assure compliance to A490. The manufacturer certifies in writing that the bolts meet the requirements of the purchase order as well as the ASTM Standard. The receiving inspection which is performed verifies that the requirements of the purchase order have been met, the correct material has been received, and there is no obvious damage. A 100% reinspection of every bolt is neither conducted nor required, especially when large quantities are received. If questionable indications are discovered at any time during receipt inspection or during issuance of the material, those indications are evaluated to assure that the item meets the appropriate standard.

Since a 100% reinspection is not conducted, it is conceivable that indications may have existed that were not detected. It must also be clarified that all indications are not necessarily defects. The appropriate standards detail the acceptance criteria.

It is not the primary responsibility of the field inspectors to verify the acceptability of the bolts. However, any group within the manufacturing, QA receiving, engineering, craft, or QC process can, and often do, identify questionable indications through the use of their respective reporting procedures. The indications are subsequently evaluated for acceptability against the appropriate acceptance criteria.

JI #126, Motion at 38.

It is alleged that:

On October 17, 1983 Pullman QA management informed Mr. Lockert that he no longer would be able to research or make copies of professional standards such as the American National Standards Institute (ANSI) or American Society of Mechanical Engineers (ASME) codes. This action prevented Mr. Lockert from conducting necessary research for his inspections when the engineering specifications were deficient through failure to include any rejection criteria. (citing Lockert Aff. at 3, A5)

30. At no time has any inspector, Mr. Lockert included, been forbidden to research applicable codes and standards or other pertinent documents. However, such research activities must be performed within the time constraints of the individual's assigned activities. In the case of QC inspectors, they are assigned to specific activity areas in the plant and are required to be in those areas to sign off on the work being performed when the appropriate hold points are reached. Mr. Lockert was not terminated for merely being physically outside of his work area. Mr. Lockert's problem was not that he left his assigned work area to do research, but rather, he left his assigned area without asking the permission of his leadman or supervisor, and his whereabouts were unknown for extended periods of time. Such absences led to work stoppages and/or delays. Had Mr. Lockert requested the necessary approvals, or had he pursued his research during other available times, the information he desired could have been easily obtained as it is always readily available. It can be further pointed out that in most cases, the need for QC inspectors to perform such research is minimal. The procedures in use generally reflect the requirements of the relevant specifications, codes, and standards. Thus, the originating documents should not need to be researched once the procedure has been approved.

JI #118, Motion at 34.

It is alleged that:

> In some cases the engineering specifications did not consider the possibility of failing the hardware; there were no rejection criteria. This was the case for the procedure covering installation of pipe rupture restraint bolts, as a QC Inspector learned in October 1983 when he inspected those bolts in Unit II. (citing Lockert Aff. at A9.)

45. Not only is the allegation in the Motion incorrect, it is not supported by the underlying Lockert affidavit. Mr. Lockert said nothing about "the procedure covering installation of pipe rupture restraint bolts." The affidavit refers to the criteria for accepting or rejecting the bolts, not the procedure for installing them.

46. The affidavit states that there were no rejection criteria for the bolts in ESD 243. This is correct. The criteria for accepting bolts are procurement criteria and, as such, they would not be found in ESD 243. The correct action for Mr. Lockert to have taken was to reject the bolts with the "visible forging laps" - which h did - and then refer the rejection to receiving QA personnel to determine whether the bolts met acceptance criteria, an action which he did not take. As a Pullman Field QC Inspector, checking procurement specifications was outside the scope of both his training and job duties. This was exactly what Mr. Lockert's supervisor told him. He was at no time told to accept the bolts because the rejection criteria were not in the ESD, as alleged in Mr. Lockert's affidavit.

47. The acceptance criteria for the bolts are properly specified in the procurement documents. The acceptance criteria for the installation of bolts are contained in the ESD. Thus, the allegation that there were no "rejection criteria" is simply not true.

V-39 and 44

It is alleged that:

(In addition to the above mentioned hardware problems, Pullman's ESD 243 of late 1983 had procedure problems written into the Rupture Restraint Program:)

6. The tables provided for the description of acceptable washers had not been updated per the requirements of AISC, Sec 5, Page 191, para. 2(a).

7. Acceptance criteria for High Strength bolts was [sic] not defined in ESD 243. Filed [sic] Inspectors did not know, nor were they legally able to reject bolts that were defective per ASTM A-490, ASTM A-325, and ANSI B18.2 requirements.

8. Bolt Torque Tables in ESD 243 were still out of compliance with AISC Manual requirements as late as December '83. Discussions with Pullman Field Engineers Dale Warren and Larry Werner indicated that although the tables had been recently updated, they still do not meet AISC Manual requirements. (4/26/84 Lockert Aff. at 5-6.)

11. Defects in bolts were not reported per a NCR. I was unable to report the defects I had found in A-490 bolts because I was not allowed to consult the procurement documents needed to properly generate such a report. Pullman Supervisor, Russ Nolle specifically prevented me from referencing these documents by saying that I was out of my area. (See Oct. 17 indicent (sic) of Lockert Letter addressed to Mark Padovan, USNRC dated 1/2/84.) (4/26/84 Lockert Aff. at 7.)

None of these allegations are new and all have been responded to previously. The allegation about the use of washers was previously answered in reply to NRC SSER 22, allegation #129G (DCL-84-186, May 17, 1984). That answer said, in part, that:

"This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Geske, et al. Aff. at 22-23. As stated in the response, the Pullman ESD was more conservative than the current industry standard. Because ESD 243 was more than adequate, there was no pressing need to advise all other inspectors of a pending revision. ESD 243 is in the process of being revised..."

Although when initially submitted, it was intended to conform the revised ESD to the present ASTM A 436 industry standard, subsequent discussions have indicated that full-scale adoption of this standard cannot be achieved. However, the revised ESD will explain the acceptable washer criteria in sufficient detail to ensure that all installations are accomplished in an acceptable manner.

The issue of acceptance criteria for high strength bolts has been previously addressed in response to NRC allegation #242 (DCL-84-195, May 29, 1984).

NRC Allegation #0904

Allegation Description:

SF design team attempted to cut off time for issuing drawing to the field thereby violating document control procedures without reporting the problem. Could cause work to occur w/o approved drawings.

NRC Allegation Paraphrase:

San Francisco design team attempted to cut off time for issuing drawing to the field by violating document control procedures without reporting the problem, which could cause work to occur without approved drawings. For example, around March 1984, San Francisco was issuing drawings down to the site and the drawings are supposed to come from San Francisco and go to document control up in the main building. But instead, they were coming from San Francisco, going to a member of the San Francisco design team who would send the drawings to the PTGC document control, and then the PTGC document control would run copies and send a copy out to the field and a copy to document control. Apparently what they were trying to do was cut off time for issuing the drawings to the field. The problem was, this practice was outside of procedure. This ties back in with the layout program, in that some of these drawings were issued out to the pre-inspection group, which sends the layout. There were ten drawings that San Francisco decided, for some reason, not to issue the layout. They were calling these ten layouts back, but these ten layouts had already made it to the field. They were already drilling holes in the concrete, without an approved for construction drawing, a drawing that would never be issued.

The alleger is confused and incorrect. Drawing changes are issued by Engineering to Construction through the use of a Design Change Notice (DCN) which is initiated, processed, and approved in accordance with Project Procedures. In March 1984, the Unit 1 procedure controlling issuance of DCNs was Engineering Manual Procedure (EMP) 3.60N, and the applicable Unit 2 procedure was Project Engineer's Instruction (PEI) 16.

For either case, the Engineering drawing approval process should not be confused with the purely administrative document tracking function normally performed by the Project Coordination Section (PCS). After approval by the Project Engineer, the DCN is normally routed through PCS and delivered to the General Construction Document Control Group for distribution to construction forces. The alleger is referring to a practice where the Project attempted to reduce the time required for this administrative process by hand carrying all paperwork through each step. This practice does not change or violate the DCN approval procedures of EMP 3.60N or PEI 16. PGandE is not aware of the particulars of the alleged incident involving ten drawings and, therefore, cannot address the allegation further.

NRC Allegation #0906

Allegation Description:

Alleger was told not to do research as to the conflict between two red line memos. Also told to drop the subject of drilling anchor bolt holes allegedly against a procedure.

NRC Allegation Paraphrase:

Alleger was told not to do research as to the conflict between two red-line memos. Also told to drop the subject of drilling anchor bolt holes allegedly against a procedure. The alleger feels intimidated to the effect that if he does any follow-up of any concerns, in this case red-line memos, not in his normal duties, he will be fired. The alleger feels that he would be demoted to a lesser job in the least. A similar happening was when the alleger brought to his supervisor a concern regarding pre-inspection group drilling anchor bolt holes. The alleger felt the common practice of sending the package to the craft who would then drill the holes was against the procedure. The supervisor told him to drop it.

Pullman QC Supervisors do not recall a specific incident of telling an inspector not to do research as to a conflict on two red line memos. Without information on the specific memos, time frame, or personnel involved, a specific response cannot be prepared.

In general, every effort is made by supervision to resolve conflicts in memos and provide consistent direction to personnel. An inspector must get authorization from his supervisor to perform work outside his area of responsibility. It is the supervisor's responsibility to determine which situations need further investigation as well as who is best equipped to perform the function if it is necessary. Often the individual who raised a concern is not the best equipped to pursue the matter to resolution and would not be so assigned by his supervisor.

Sometimes an individual does not agree with the supervisor's assignment and feels he is being prevented from performing his job as he perceives it should be performed. An individual might also insist that he be allowed to do follow-up work in areas outside his area of responsibility. Where an individual persists in going against his supervisor's orders, it is conceivable that a supervisor may have reprimanded him. An individual may feel that such a reprimand is intimidation but such is not necessarily the case.

PGandE is unaware of any instructions that were given to any inspector to cease work on a legitimate concern within his assigned work responsibilities. The allegation does not provide sufficient details to allow a specific response about drilling anchor bolt holes during preinspection (layout). However, a similar concern was raised by Mr. T. J. O'Neil in DCN 1604-039 and in his letter to the NRC dated July 27, 1984.

The preinspection and hanger layout program was established by and under the control of PGandE, not Pullman. The program used drawings under PGandE control which had not been issued to Pullman for construction. Pullman craft personnel were utilized to assist PGandE in the layout of the hanger to determine constructability.

It is known by PGandE Engineering that the location of the anchor bolts was critical to the success of the hanger design. Therefore, it was decided that, as part of the preinspection program, the location of the anchor bolts would

be checked to be sure the hanger could be installed at that location. The proposed location of any concrete anchors was laid out on the floor, wall, or ceiling based on the design drawing. A rebar scan was performed to locate any rebar and relocate the proposed hole locations, if necessary. Exploratory drilling in the concrete was then performed to confirm that the concrete anchors could be installed at that location. If rebar was encountered, drilling stopped and Engineering was contacted to determine new anchor hole locations.

No concrete anchors were installed during this preinspect/layout operation. After the preinspect/layout operation was completed, the preinspected design drawing was issued to Pullman through PGandE's document control. This drawing was then issued by Pullman for installation as an Approved For Construction Drawing. The inspection requirements, prior to installation, of ESD 223 for the concrete anchor bolt holes were conducted and documented as part of the hanger package by Pullman.

The entire process was performed in compliance with the applicable PGandE and Pullman procedures.

NRC Allegation #0907

Allegation Description:

Started receiving a backlog so the alleger started eliminating the checking portion of a hanger package.

NRC Allegation Paraphrase:

Pre-inspection started receiving a backlog during hanger inspection. There was one phase of the program where the hanger would be inspected and the engineers would review the procedure. After that someone else reviewed the package. When the backlog started, the checking portion of the procedure was eliminated.

During backlogs that occurred during the preinspection program, occasionally a cross-check of the construction package was eliminated. The eliminated check was not one of design calculations; rather, it was an efficiency measure to verify whether necessary preparational work was authorized or accomplished, e.g., insulation was removed, anchor bolts had been drilled, or there were no conflicting structures. There were no safety effects from such check elimination. Even if all necessary authorizations were not included or preparatory work was not accomplished, the only effect of failure to include such information was to slow the construction process.

NRC Allegation #0908

Allegation Description:

A procedure said to verify all groove welds but PPP wasn't verifying all the groove welds. Another one said to explain cross-outs on the back of process sheets. The alleger was told to ignore inst.

NRC Allegation Paraphrase:

A procedure said to verify all groove welds. Pullman was not doing this. Possibly ESD 253 or 263. Another procedure said to explain cross-outs on the back of the process sheets. Employees were instructed to ignore this. Possibly ESD 253 or 263.

The subject of QC fitup inspection of groove welds was previously addressed in PGandE Response to Joint Intervenors' Motion to Reopen the Record on CQA, dated March 19, 1984, Breismeister et al., Aff. at 34-36 (JI 48 and 49). The previous allegations and responses are attached hereto.

The requirements for making corrections and/or changes to process sheets are specified in Pullman Procedures ESD 254 and 264. Both procedures require that corrections/changes shall be initialed and dated by the individual making the change and an explanation be provided on the applicable document.

Certain changes/corrections are made during the preparation of the document, such as indicating that an item is not applicable (N/A) with the preparer's and approving party's signatures indicating concurrence with this change.

Other changes are self-explanatory, such as deleting the requirement to install and inspect concrete anchors when there are no anchors on the design drawing.

The final documentation is reviewed by QA to assure its accuracy and completeness. Unacceptable changes or corrections made to the process sheets are resolved prior to acceptance of the documentation.

PGandE is unaware of any direction given to employees to "ignore" instructions contained in the procedures.

JI #48 and 49, Motion at 18-19.

It is alleged that:

Process sheets that guide quality control coverage did not consistently call for inspections of fitup for flare bevel groove welds. Since this was one of the joint configurations not covered by the 7/8 procedure in the first place, the loophole leaves the quality of the ensuing weld doubly unreliable. This uncontrolled work has been occurring as part of the current design modification construction work. (citing Hudson Aff. at 5-6.)

PG&E informally exempted flare bevel welds from QC fitup inspections, without proper engineering review and approval. The loophole violated engineering specification ESD 264, which requires inspections of groove welds and full penetration welds. (citing Hudson Aff. at 5-6.)

103. Mr. Hudson is apparently concerned that the lack of fitup inspection may have been detrimental to the quality of flare bevel groove welds.

104. Flare bevel groove welds are partial penetration welds and occur when rectangular tubes with rounded corners are placed next to another piece of steel. The root of the weld, where the two pieces contact each other, is not required to be welded. The two pieces of steel may actually touch each other or there may be a gap when the pieces are fitup prior to welding.

105. The fitup does not affect the required weld. If there is a gap, the weld will be larger and stronger than needed. Fitup inspection of flare joints would, therefore, simply be a waste of time.

106. Flare joints are prequalified for structural applications and may be used without performing qualification tests. This allegation has no effect on structural integrity or safety.

107. Mr. Hudson's allegation regarding a violation of ESD 264 is completely false. As explained above, fitup inspection for flare joints would be a waste of time. ESD-264 and ESD-223 require fitup inspection of flare bevel joints only in one situation. In those individual situations, fitup inspections have been done. In all other cases, ESD-264 and ESD-223 do not require any fitup inspection for flare bevel joints.

108. The "informal exemptions" from PGandE that Mr. Hudson notes, are memoranda clarifying PGandE's intent for flare bevel fitup inspection, and are intended to assure that the ESD-264 is properly implementing engineering requirements.

109. In summary, PGandE and Pullman did not act improperly, and lack of fitup inspection for flare bevel joints was appropriate.

NRC Allegation #0911

Allegation Description:

Design engineers in the pre-inspect program with no field experience didn't know how to use fillet gauges to measure weld sizes.

NRC Allegation Paraphrase:

Alleger had a safety concern that pre-inspection engineers did not know how to use fillet weld gauges. They were mostly design engineers with no field experience out there measuring welds.

This allegation is without any substance. Gauges are provided in marked increments which measure the exact weld leg size called for on a drawing. If one can identify fractions and one can use a ruler, a person of reasonable intelligence should be able to use a fillet weld gauge even without prior field experience.

NRC Allegation #0915

Allegation Description:

Violation of QC inspection hold points.

NRC Allegation Paraphrase:

A QC inspector found hold points violated while performing an in process inspection of the weld inspection sheet. He was not allowed to hang hold tags when the problem was found. He was instructed not to document a hold point that had been violated. It was stated that this normally occurs when a following shift picks up the previous shift's paperwork.

Contrary to the allegation, hold points were not violated. Inspectors who were performing and completing hold point inspections towards the end of a shift were not completing the formal paperwork showing the performance of the inspection prior to leaving work at the end of their shift. The inspectors on the following shift were finding work that appeared to have proceeded past the required hold point because there was no documentation in the work package that indicated that the hold point inspection had been performed. In fact, the inspections had been performed, but the inspectors who performed the hold point inspection were only documenting each inspection they had performed in their daily log books and not in the work package. As a result, it became common practice for an inspector to check the log book of the inspector assigned to perform the inspection, prior to hanging a red tag in those situations where it appeared that a hold point inspection had been bypassed.

It is unclear whether the allegation is referring to an across-the-board instruction not to document any hold point violations whatsoever, or whether the allegation is referring to hold point violations that occur under the

circumstances discussed above. If the former, the allegation is completely false. QC inspectors were never instructed to not document violations of QC hold points. If the latter, the inspector was more than likely instructed not to hang a hold tag until they had checked the assigned inspector's daily log to determine if the inspection had occurred. If it is found not to have occurred, inspectors are required to document the hold point violation in accordance with QC procedures.

Although this gap in documentation occurred, Foley issued directives in early 1984 that require the inspectors to complete the paperwork at the time of inspection. Since the issuance of the directives, the incidence of this type of occurrence has been eliminated by tighter control of the inspection documentation.

NRC Allegation #0917

Allegation Description:

Quality engineering department set up their own separate entity for hanging red tags.

NRC Allegation Paraphrase:

Quality Engineering set up their own entity to hang red tags. QA/QC people had to phone in their discrepancy, and receive a number for the tag. Then they had to wait until an engineer would come out and verify the discrepancy. The alleger further states that production personnel had to inspect the work before calling QC. Red tags were a detriment to production foreman. After five red tags, a foreman was busted back to crew.

Although GFACo did not have a Quality Engineering Group and did not formally adopt such a procedure, there was a period during 1978 when an informal procedure similar to that discussed above was utilized. The informal procedure was developed in response to a problem Atkinson was having with inconsistent application of inspection criteria.

Items that were being accepted by one inspector were being rejected by another. In an effort to develop consistent application of criteria among inspectors, it was decided that inspectors were to contact supervisors prior to hanging red tags, in order to review the condition to determine whether a red tag was, in fact, required.

Contrary to the allegation, there has never been a "red tag" rule nor was there ever a practice of any contractor at Diablo Canyon to "bust back" a foreman for the number of red tags being hung on work within his area of responsibility and to the best of PGandE's knowledge, this never occurred.

Finally, the suggestion that production personnel had to inspect work before calling QC personnel, although not required by any procedure, is a good suggestion. By having production personnel inspect the work, improperly performed work can oftentimes be corrected prior to QC inspection, thereby improving the quality of the final product.

NRC Allegations #0925 and #1435

Allegation #0925 Description:

Foreign steel used to fab crane rails in the turbine building.

NRC Allegation Paraphrase:

The rubber blocks, stoppers for the cranes, say "Made in Japan" right on them.

Allegation #1435 Description:

Plate steel material certificate indicates foreign manufacture contrary to contract requirements.

All foreign manufactured material purchased for use at Diablo Canyon has been certified to the same or equal engineering standards as domestic material. In addition, all foreign or domestic material is subjected to the same quality assurance and quality control programmatic requirements. Foreign materials used in place of domestic material must meet all code, specification, and standard requirements that domestic material must meet.

PGandE policy, as originally reflected in equipment and material specifications, was to encourage the purchase of domestically produced materials by PGandE and PGandE contractors at Diablo Canyon. This policy supported a "buy American" philosophy. It was not indicative of foreign products being inferior, but was based strictly on the nationality of the manufacturer.

While it was a general policy to purchase domestic material, PGandE has, on limited occasions, authorized the purchase of foreign material contingent on compliance with all applicable specification requirements. Material availability has been the main factor influencing PGandE's decision to allow the purchase of foreign in lieu of domestic materials, providing that the material met the quality requirements.

The use of foreign material is not prohibited as long as it meets the required drawing/specification and: a) is not available in a domestic equal; b) delays may be encountered by the use of a domestically supplied item; or c) cost justifies the use of foreign materials.

Contrary to the allegation, turbine building crane rails are not made of foreign steel, but were fabricated by Bethlehem Steel. The safety-related rubber blocks referred to were provided in accordance with PGandE design drawing 439586. On November 16, 1970, the identification on the drawing for these stops was revised to read "SEIBU RUBBER DOCK FENDERS TTB-400 Hx750L (manufactured by Seibu Rubber Chemical Co., Ltd.)." While the bumpers are of foreign origin, they were purchased according to the specifications for the purchase of foreign materials set forth above.

NRC Allegation #0927

Allegation Description:

Procedures did not have up-to-date PCN's procedure change notices.

NRC Allegation Paraphrase:

The procedures provided to inspectors did not have all the current Procedure Change Notices (PCN's). There was not enough copies of the procedures available for all to use.

Prior to 1984, Foley's method of issuing Procedure Change Notices (PCNs) was to issue the PCN to Document Control for distribution prior to its effective date. In addition, the procedures were in the possession of individuals rather than being kept in central locations. Because of the large number of controlled procedures issued, there were times when individuals did not receive their updated copies of PCNs prior to the effective date. Investigations determined that the primary reason some individuals were not receiving updated procedures was that Document Control was not always able to locate the manual holders during the time it was distributing the new procedures.

The same investigation determined that the occasional inability to locate the manual holder and his manual did not cause any quality problems since there always were sufficient copies of current manuals available for use. But the process did annoy some individuals who preferred to use their own manuals rather than having to use another.

Recognizing the frustration caused to manual holders and the potential problems that could develop, the entire process was revised by Foley. The most significant change is the distribution of a proposed PCN to the affected disciplines for review and comment prior to its effective date. This particular change assures that all parties affected are aware that a procedure change is in process. In addition, all affected personnel are required to read each PCN and sign off on the Quality Instruction and Training Form to assure each is aware of the change.

The allegation also contends that not enough copies of procedures were available for use, but it does not provide sufficient information to address any specific instances where this may have occurred. During the revision of the program, Foley determined that more controlled copies of procedures existed than were necessary and the number of controlled copies in the field was reduced. To assure availability of current procedures in the field, manned stations have been assigned controlled sets of procedures that are not allowed to be removed from the station. In addition, Document Control maintains a copy of the current procedures and procedure manuals that are always available for reference and cannot be removed from the department. At no time was it found that there were not enough copies of procedures available for use.

NRC Allegations #0937 and 0938

Allegation #0937 Description:

Pullman violated minimum wall during repair welding - field weld 197.

Allegation #0938 Description:

Problems with field weld 197 should have been reported by licensee to NRC.

NRC Allegations #0937 and 0938 Paraphrase:

As stated in characterization.

These subjects were previously addressed in response to NRC Allegations #338, #340, #353, and #354 submitted in PGandE letter DCL-84-195 dated May 29, 1984. The previous allegations and responses are attached hereto.

NRC Allegations #338 and #340

It is alleged that:

A defect had been found, a crack extending 10" long and approximately half way through the thickness of the pipe. The crack originated on the nozzle side of the root pass under a roll over where the reentrant angle was probably less than 90. Other cracks had been observed in the land surfaces of the nozzle and pipe counterbores. Lets compare the above to a quote from PG&E's report 411-77.55 "It is believed that small cracks initiated on the I. D. of the nozzle, weld, and pipe during the thermal cycling that occured (sic) during preheating. These smallcracks originated at convenient stressrisers such as grinding scratches and regions of lack of fusion and weld bead rollover." Mr. Runyan could not see the similarities between the two because he had already made up his mind about the failure of F.W. 212 back in April. Mr. Runyan said in his summary to his QA Report of F. W. 212 "It is my believe (sic) that the crack was peculiar to F.W. 212 only and not of a generic nature. Therefore, at this time we are assuming that no further repair will be required and that when the disposition of D. R. 3370 is completed the subject will be closed."

Defects had been found in steam generator nozzle to pipe welds that had been fully inspected and accepted. F.W. 197 and F.W. 244 revealed cracks on the nozzle side of the root similar to the crack that initiated the failure of F.W. 212. These cracks are defects which, if they were left uncorrected could have adversely affected the safety of the plant. The defects should have been reported to the Commission. I believe that a break down in Quality Assurance of construction has occured (sic) because the welds had been accepted and had been put in service with out (sic) discovering the defects. Additionally, after the failure of F.W. 212 when a 100% reinspection of radiographs on Class I welds had revealed problems in previous interpretations, when F.W. 197 required repair in April, and when extensive repairs had been made to all the nozzle to pipe welds in Unit 1 the NRC had not been notified as required by 10 CFR 21 and/or 10 CFR 50.55e. I believe that PG&E's failure analysis of F.W. 212 is shoddy work, I believe that there has been an attempt to fix the mistakes on the sly and that there has been purposefull (sic) withholding of information from the commission. (4/10/84 Lockert Aff. at 9-10.)

It occurs to me that both of these mistakes appear to be reportable per 10 CFR 50, paragraph 50.55e. (Lockert Aff. at 6.)

F. W. 197 was subsequently radiographed and the film read by an individual named Ken Beck on 1/28/75. Mr. Beck noted that tungsten inclusions were distributed through about 75% of the weld. Mr. Beck did not note a drop thru (sic) that also had linearly oriented voids. Apparently, someone requested another radiograph because the weld was reradiographed but with wider film to include a repair made to the nozzle. Again the weld was accepted but this time with recognition of the burn thru (sic) on 2/11/75 by Mr. Shore.

The time frame for documentation of events now shifts to March 17, 1977 when the leak was discovered in F.W. 212. These events are documented in the M. W. Kellogg QA Report by J. P. Runyan dated 4/12/77. The radiograph for F.W. 197 was again reviewed at this time and a decision was reached to now remove the drop thru (sic) present on the inside of the pipe. The repair was made per DR 3370 and consisted of cutting a hole in the pipe and grinding out the burn thru (sic). I think that it should be noted that the R. P. Runyan noted DR 3370 in his report dated 4/12/77 but that the letter addressed to Mr. R. H. Engelken of the U S N R C Office of Inspection and Enforcement, Region V, written by a Mr. Philip A. Crane, Jr. makes no mention that a condition requiring repair had been found, in fact, Mr. Crane reported that PG&E's examinations revealed no rejectable indications for any of the four main steam and three feedwater welds as of 4/15/77. (4/10/84 Lockert Aff. at 6-7.)

This dissertation has been reduced by the NRC staff to five issues for which responses have been requested. These are the following:

338. Failure to report crack on FW 212 to NRC per 50.55 (e) correction to cracks undetermined.

339. Q.A. breakdown due to failure to discover welding defects.

340. Failure to notify NRC per 10 CFR 21/50.55 (e) when 100% reinspection of radiographs revealed previous misinterpretation.

354. Failure to report welding deficiencies per 50.55 (e).

355. Failure to report rejectable indication stated in DR3370 to NRC.

38. The following is a chronological overview which places the steam generator feedwater nozzle FW 212 issues into perspective. PGandE reported the situation and made complete disclosure of subsequent related events. There was 100% reinspection of steam generator nozzle welds. There was also an extensive reexamination of radiographic film. All PGandE actions are documented. The allegations result from an after the fact review of a portion of related documents by an individual who was not onsite or even a QA/QC inspector at the time of the events in question. Mr. Lockert's allegations regarding failure to report to regulatory authorities and a coverup are incorrect. This chronology is applicable to the reportability aspects of NRC Items 338, 339, 340, 354, and 355.

39. Chronological Overview

March 17, 1977. A leak was revealed in the steam generator feedwater nozzle weld during testing. The testing was stopped, and the leak was investigated.

March 18, 1977. PGandE notified the NRC Office of Inspection and Enforcement, Region V of this condition.

March 23, 1977, a Discrepency Report (DR) 3370 was opened to document the radiographic interpretation concerns related to this issue. The NRC participated in the radiographic review. Re-review of radiographs was begun.

April 18, 1977. A preliminary 10 CFR 50.55(e) report was made to Region V regarding nozzle cracks.

May 6, 1977. The NRC notified PGandE regarding a noncompliance in relation to the radiography issue.

June 3, 1977. PGandE reported to NRC Region V on the review of radiography, and responsed to Notice of Violation.

June 3, 1977. PGandE made report to NRC Region V regarding FW 212 crack cause and repairs, and indicated an ongoing investigation.

July 6, 1977. PGandE advised the NRC of a possible 50.55(e) report regarding radiographic interpertation.

August 4, 1977. PGandE made progress report to NRC Region V on the Radiographic 50.55(e) report.

August 15, 1977. PGandE advised the NRC Revion V of the current status on feedwater nozzle welds and advised the NRC of plans to look at the interior of other feedwater and main steam nozzles and the intention to repair rejectable indications. NRC staff was invited to inspect these nozzles.

October 26, 1977. A final report was made to NRC Region V regarding the radiographic issue. All design Class 1 field pipe welds performed by Pullman were reviewed. Repairs necessary in Unit 1 were completed. The radiographs for 235 factory pipe welds were reexamined, and no defects requiring repairs were found.

March 22, 1978. PGandE made its final report to NRC Region V on the steam generator nozzle cracks and repairs, including repairs made during internal inspection. All steam generator nozzle to feedwater and main steam pipe welds were inspected.

April 17, 1978, PGandE made minor clarifications to its March 22, 1978 memo.

40. The backup investigations were extensive and were very conservative engineering and quality assurance actions. The extensive radiographic review re-examined hundreds of welds. The nozzle investigation was equally thorough. To remove any doubts regarding generic concerns, the feedwater pipes were cut apart from the feedwater nozzles to permit inspection of the internal surfaces.

41. These is no merit to the allegation regarding failure to file the proper reports or to perform a thorough evaluation. The examination was extensive, and all actions were reported to the NRC. No further corrective action is required.

42. The technical issues of Allegations #339, #354, and #355 are responded to separately.

NRC Allegation #353 and #354

It is alleged that:

Steam Generator 1-1 nozzle to pipe weld also has an interesting history. F.W. 197 was first performed prior to a Dec 3rd meeting between Mr. J. W. Ryan and Mr. P. J. Carosella, the then Pullman Construction Manager and Senior Safety Engineer for the Department of Industrial Relations of the State of CA, respectfully (sic). Mr. Carosella makes mention of the fact that F. W. 197 had experienced a crack extending the circumference of the pipe because Pullman production had welded with out (sic) the use of preheat. The process sheet for the second try at F.W. 197, which by the way is not marked R1, is shown with the process sheet for F. W. 212 provided on page 33 of PG&E's report. Note that the preheat for the second try is not signed of (sic) by the ~~MVK~~ inspector and there is no reference to a preheat chart. Also note the inconsistencies in the inspection coverage between the two welds: the ANI checked for visual inspection but not the root pass on F.W. 197 but did just the opposite for F.W. 212. I think that the DR that covers why F.W. 197 was welded without preheat before Dec. 3 should be examined to make sure that the corrective action called for by Mr. Carosella in his Dec. 18th letter addressed to J.P. Runyan, W. M. Kellog's QA/QC Manager was adequately established. Also, some explanation for the lack of preheat data available for the second attempt at F.W. 197 during Dec. 23 to Dec. 30 of 1974 must be provided. It occurs to me that both of these mistakes appear to be reportable per 10 CFR 50, paragraph 50.55e. (4/10/84 Lockert Aff. at 5-6.)

14. The allegations are misleading; they are based on suppositions rather than facts.

15. The welding activity on the steam generator 1-1 feedwater nozzle (FW 197) prior to December 3, 1974, consisted of temporary welds for shipping caps and hydrotest caps. No permanent installation welds were attempted then. The crack documented by DR 2450/Rev. 1 in June 1974, was related to a temporary weld. There was only one FW 197, that on December 23 - 30, 1974. There was no need to identify this weld as R1 because it was not, as alleged, a repair of a previously cracked weld. The preheat for FW 197 began December 24, 1974, prior to tack welding and was provided for all other FW 197 welding. This preheat need not have been signed off by Kellogg's inspector because it was recorded on chart 332.

16. Contrary to the allegation, differences in inspection coverage of in-process welding on FW 197 and FW 212 are permissible; it is not a code requirement that all welds receive the same in-process inspection. It is permissible that inspections be done on a surveillance basis. Kellogg's Quality Program requirements were met.

17. Similarly, root pass inspection was done on a surveillance basis by the authorized inspector. This inspection frequency is appropriate and permissible.

18. Contrary to the affidavit statement that there is no reference to a preheat chart for FW 197, Mr. Lockert's own Exhibit 6, upon which the allegation is based, has the notation: "use chart recorder." The preheat was recorded on chart number 332.

19. Mr. Carosella, addressing the crack related to the temporary weld, indicated that lack of preheat was the problem, as had been documented in DRs. However, he indicated incorrectly that the welders had been assigned prior to receipt of a qualified WPS for P1 to P12B material. Mr. Carosella did not have complete information. The P1 to P12B WPS had been qualified the previous year and was released to Kellogg construction on December 31, 1973. The lack of preheat was corrected on the subsequent welds. Interestingly, Mr. Carosella correctly refers to SA508 Class 2 as P12B material (Lockert Exhibit 1).

20. The reportability issue has been discussed in the response to Allegation #338. The supposition that reportable activity had occurred in this case is incorrect.

21. These allegations have no merit and no implications with regard to safety. No action is required.

NRC Allegation #0939

Allegation Description:

Pullman employee had a habit of not including all the discrepancies on his radiographic check sheet in his Pullman reports.

NRC Allegation Paraphrase:

It is the alleger's knowledge that when you read a radiograph all indications should be noted, whether they are rejectable or not; porosity, scratches on the film, drop throughs, etc. Two particular examiners had a habit of not including all the discrepancies on the radiographic check sheet.

All indications are not deficiencies. Rejectable indications or deficiencies are required to be recorded. Pullman is unaware of any inspectors who did not include all rejectable indications or discrepancies on the radiographic check sheet.

There are no code, specification, or ESD requirements that an examiner must note all indications on radiographic inspection reports as is claimed by the alleger. Generally, PGandE would agree that the preferred practice would be to list acceptable, as well as rejectable, indications on radiographic inspection reports, but no written requirement was ever established at Diablo Canyon to do so.

Each report clearly indicates whether the weld has been accepted or rejected and the reason for rejection is specified. This is all the information necessary to properly prepare an inspection report, and all that should be necessary to satisfy a subsequent reviewer of the radiograph.

In the unlikely event that a subsequent reviewer does not accept a radiographic report without each accepted indication being explained, a discussion would be required between the two reviewers to resolve the concern. If the discussion did not resolve the concern, a new radiograph could be performed to satisfy the second reviewer.

NRC Allegation #0944

Allegation Description:

Atkinson weld test booth supervisors were not required to be in continuous attendance during welder testing.

NRC Allegation Paraphrase:

There were no written procedures on how an inspector was to conduct his surveillance of welders in the weld test booth.

It is true that GFACo weld test booth inspectors were not required to be in continuous attendance during welder testing. However, there is no code requirement or other compelling reason that they be constantly present. GFACo Quality Control Procedure W-1, "Welding and Welder Qualification," provided the criteria for welder qualification, including the information and requirements to be included on the "Welder Performance Qualification Test" report. This report required that the tests be "witnessed" by a GFACo QC inspector and then accepted by a GFACo QC or QA representative. There is no requirement that, during the welding test, either or both supervisors be in continuous attendance.

NRC Allegations #0945 and 0946

Allegation #0945 Description:

Bolts attaching pipe hanger and supports in the diesel generator building may not have proper torques.

NRC Allegation Paraphrase:

The alleger states that when a hanger is attached to a concrete wall, holes are drilled to insert Hilti or Phillipps bolts. The procedure is to drive them into the wall and torque them without the plate. When they set up they are supposed to be 1/8" from the surface. You can verify a true torque reading because the bolt shield is not against the plate. If it is against the plate, you get a false torque reading.

Allegation #0946 Description:

QA inspectors told not to look at "old work."

NRC Allegation Paraphrase:

An inspector found numerous cases where the shield of the Hilti Bolt was against the plate. This was found when inspecting the pipe support. He attempted to write DCN's but was told not to look at old work.

The first sentence of the paraphrase refers to Hilti and Phillips bolts which are both used at Diablo Canyon. These are bolt or stud type anchors which must protrude from the wall and therefore cannot be recessed 1/8-inch below the concrete surface. However, the anchors being referred to in the paraphrase are shell type anchors which, on new installations, are required to have the top of the shell 1/8-inch below the concrete surface. QC inspection of hole size, shell installation, plug depth, and final torque are all specified in ESD 223.

Installation of shell type anchors flush with the concrete surface was previously an acceptable practice but their installation was not inspected by QC. However, all the shell type anchors installed prior to 1977 without a QC inspection were inspected during a 1977 rework program. Detailed examination and acceptance criteria were established, approved by PGandE, and used for this inspection. Shell anchors flush with the concrete was not a rejectable condition.

All shell type concrete anchors installed after 1977 were inspected by QC against established criteria. The criteria included verification of hole size, shell installation, and correct plug depth.

In response to NRC I&E Bulletin 79-02, PGandE did an investigation that, among other things, determined the acceptability of the existing shells being flush with the concrete. Evaluation of the results of this investigation determined that the existing installations were acceptable and rework was not required. However, PGandE also concluded that, although the existing installations were acceptable, this installation procedure was no longer desirable and procedure ESD 223 was revised.

During subsequent rework of existing supports for other reasons, questions arose concerning the installed shell type anchors and whether they needed to meet the criteria for new installations specified in ESD 223. The questions arose primarily because the 79-02 investigation and results were not common knowledge to all Pullman Inspectors. One particular inspector's concerns were

identified by him or DCNs and referred to PGandE on DR-4394, a copy of which is attached. The disposition of the DR was to accept as-is, based upon the response to I&E Bulletin 79-02 discussed above.

Despite the DR and its disposition, questions continued to be raised about the acceptability of the "old work." To provide this information to all parties, the criteria for acceptance of existing shells was prepared, included by revision in ESD 223, and approved by PGandE.

10 CFR 21
(IS) or (IS NOT)
ATTACHED

Pullman Power Products

ORIGINAL

DISCREPANCY REPORT

D.R. NO. 4394
SO. NO. Various Hgrs. Below
UNIT NO. 1
CODE NO. 8

CUSTOMER: Pacific Gas & Electric SPEC. NO: 8711 DATE: 8/28/81
PROJECT: Diablo Canyon JOB NO.: 7177 INSPECTOR: H. Karner/P. Haffey

DISCREPANT ITEM: Shell type concrete anchors in contact with base plate REF: DCN's 776-034,036,037 040,045,047,048,049,051 - OK 6

EXPLANATION OF DISCREPANCY: WK 9/2/81

While working hangers in the turbine and auxiliary building, Elevation 73 thru 115, other hangers in the area were identified as having the shell of the concrete anchor in contact with the back of the base plate. Approximately 40 base plates were examined each having from two to four anchors installed. Only hangers with shell and base plate contact have been identified below.

RECOMMENDED DISPOSITION:

X Issue hanger drawings and rework shells which are in contact with base plates;

OR;

(2.) Accept As Is; Per response to NRC. I&E Bulletin 79-02 Nov. 1980. CB 9-29-81

OR;

WK 9/2/81 PART III APP. C

X PG&E to disposition.

FOR INFORMATION ONLY

Approved By: M.W.K. Field Q.A. Mgr. H Karner Date 8/31/81 Customer [illegible] Date 9-29-81

FINAL DISPOSITION: ☒ In Accordance With Above
Work Completed Insp: H Karner Date: 10/2/81

☐ Other (explanation and approval required))
Work Completed Insp: _____ Date: _____

EXPLANATION (IF NECESSARY):

M.W.K. Field Q.A. Manager _____ Date _____ Customer _____ Date _____

STEPS TO PREVENT RECURRENCE ☒ Not Applicable Requirements for instllation of shell type anchors have been changed to require shells to be a minimum of 1/8" below flush when installed.

Field Q.A. Manager H Karner 8/31/81

DISTRIBUTION: ☒ Master Q.A. File ☒ Auth. Insp. ☒ Engineering Dept. ☐ Other _____
☒ Customer ☐ Receiving ☐ Field Inspector (_____)

Hanger #	DRAWING/ ISO #	PLATE ITEM #	# SHELLS ON PLATE	# SHELLS IN CONTACT WITH PLATE	SHELL LOCATION	ORIGINAL INSTALLATION	LOST REWORKED
547-11	500547/14-250	6	4	1	Lower Right	Jan.1975	August 1981. Inspection only. Bolts torqued bec hanger was up-graded to Class I "E".
73-50	500073/08-203	N/A	4	2	Upper Left & Lower Right	Jan.1974	November 1978. Two left anchors exceeded flush c dition and replaced with anchors.
73-37	500073/14-206	Right Hand Angle	2	1	Lower Right	Mar.1974	March 1974
1HG-019	502160-169/26-200	N/A	4	1	Upper Left	Mar.1979	April 1979. Installed 1 on pipe.Anchors not rewo
99-77R	049280/08-75	1	4	1	Lower Right	Apr.1975	May 1978. Installed Hos Rev. Anchors not reworke
949-174R	051370/2-08-78	1	4	1	Upper Left	July 1975	July 1975
99-206	500099/09-204	N/A	2	1	South anchors	Apr.1974	February 1979. Rework T shoes per DR#3635. Anch not reworked.
97-51R	049278/12-266	5	4	1	Lower Right	Mar.1975	August 1976. Hanger A/B M-2856. Anchors not rew
99-95R	049280/08-744	17	4	1	Upper South	May 1975	May 1978. Installed Hos Rev. Anchors not reworke

CLASS E WITH NO QA/QC PARTICIPATION

98-71A	049279/06-1582	N/A	4	1	Upper Left	Unknown	6-2-80 Class E Accept

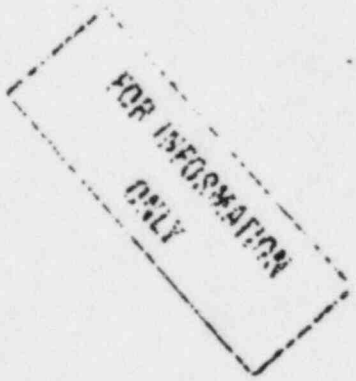
94

Part III

Pacific Gas and Electric Company
Station Construction Department
Diablo Canyon Project
Units I & II

Procedure for Testing and Inspection of Shell-Type Concrete Fasteners — As Installed — for Compliance to NRC I&E Bulletin 79-02

July 24, 1980



Summary of Results

A total of 213 randomly selected bolts were tested from the following systems:

System	# of Bolts
3*	22
7*	34
8*	24
9*	23
10*	25
12	22
13	6
14*	25
18	12
19	8
24	12

These tests were performed on accessible and removable hangers to avoid the time and expense of cutting out and rewelding hanger members.

Of the 213 tested bolts:

1) 90% were found to have preload at or above Pu/5.

2) 99% were found to have preload at or above their design load.

During the testing, we experienced three loss-of-bond failures. With the exception of these failures the existence of a torque/preload which is greater than the design load was verified in every case.

Another inspection parameter required by this procedure was the verification of gap existence between anchor shells and the back of baseplates. Of the 213 bolts tested, 25% of the anchor shells were in contact with the back of baseplates. However, the maximum measured shell slippage at preload (Pu/5) was 0.008 ", with 88% of shells measuring no slippage whatsoever. Because of this negligible shell slippage at preload it appears certain that preload is achieved regardless of shell contact with the back of baseplates.

*SAFE SHUTDOWN SYSTEM

NRC Allegations #0949 and 0950

Allegation #0949 Description:

A QC inspector overlooked slag deposits on 3 of 12 welds.

NRC Allegation Paraphrase:

Regarding the preparation for NDE, slag deposits were overlooked. Besides being visually unacceptable, it could mask possible defects underneath the slag deposit. Also, paint was not properly removed.

Allegation #0950 Description:

Rupture restraints outside the containment vessel Unit 2 location 24-46-10 over 11-RT near bent 1. Had inadequate NDE preparation and were inspected.

NRC Allegation Paraphrase:

This is one specific, however, inspector had problems with paint removal everyday.

With respect to the "3 of 12 welds," the allegation is correct that some slag was identified but the condition was not overlooked. This slag was discovered by MT technician, Jim McDermott, during his preparation and/or examination for MT on the following welds located on the pipe rack of Unit 2 at Bent 1B, FWs 217 A, B, C, D, E, F, G, H, J, K, L, and T. The welds have been identified by reference to pages 9 and 10 of Mr. McDermott's anonymous affidavit submitted as Attachment 2 to GAP Petition II dated March 2, 1984.

The welds in question are on stiffener plates being welded to an existing wide flange. Each stiffener plate used 3 field welds for installation. The welds are 1-inch partial penetration to the flanges and 1/2-inch partial penetration to the web on a 2-inch thick stiffener plate. The design of the stiffener

plates was to have a "clipped corner" in two places, 1-inch at 45^{0} (no radius). The "clipped corner" was needed so that the stiffener plates would fit over the area where the web and flange of the beam merge. The design of this configuration, by its very nature, makes the terminations of the partial penetration welds partially, if not completely, inaccessible without subsequent work.

Some, if not all, of Mr. McDermott's concerns were with weld metal which was deposited beyond the end of the groove preparation. This type of deposit is necessary to complete the particular weld configuration being made. Mr. McDermott insisted that the deposits be cleared prior to MT examination. Craft personnel were requested to do additional cleaning/preparation in these areas. However, the only way to perform this task with the tools and equipment available was to enlarge the clipped corner area by grinding.

After several days of craft personnel trying to prepare this area, the situation was brought to the attention of Mr. Karner, QA/QC Manager, as well as PGandE's Bob Torstrom. After review, it was explained to Mr. McDermott that the design of the connection made the termination of the welds at the "clipped corner" inaccessible for MT examination and that the MT procedures in use, PGandE 3212 and PGandE 3205, recognized that certain areas may be inaccessible for examination. These areas merely needed to be identified on the MT examination report.

Mr. McDermott did not agree with the QA/QC Manager's and PGandE's interpretation and insisted that the area either had to be cleaned or further prepared. After further discussion, Mr. McDermott was instructed by the QA/QC Manager to document his examinations on the MT examination reports and include all areas for which he had a concern as permitted by procedure. This is contrary to his statement that he only did this due to his frustration.

The welds, their conditions, and the MT examination reports of Mr. McDermott were identified to PGandE in a memo dated January 29, 1982. The welds in question were accepted as-is by PGandE.

Since the condition was determined to be acceptable, the writing of a DR or DCN was not required.

To say that the QA/QC Manager did nothing about the condition is totally untrue. As stated previously, the conditions were documented on the appropriate MT examination reports, identified to PGandE, and filed in the document package.

Finally, it should be noted that the "clipped corner" configuration was only used on four of the eight stiffener plates which had been installed and all of the corners had been enlarged to resolve Mr. McDermott's concerns. The four remaining stiffener plates were changed to have a 1-1/2-inch radius at the corners to provide better accessibility for cleaning and examination and were installed using 1/2-inch fillet welds to eliminate the concerns of Mr. McDermott.

The subject of paint removal was previously addressed in response to GAP #168 submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegation and response are attached hereto.

QC inspectors are responsible for performing the final visual inspections of welds, including preparation for NDE. These inspections are performed in accordance with the visual inspection acceptance criteria. Since many QC inspectors are not certified to perform NDE inspections, they may inadvertently accept prepared weld surfaces which are suitable on visual examination but which a qualified NDE inspector would not accept for the subsequent NDE examination.

Because of this, NDE inspectors are required to perform a second visual inspection, immediately prior to performing the required NDE, to assure that the weld surface is adequately prepared for proper evaluation by NDE. In the event that additional weld surface preparation is necessary to perform NDE, or if there is a need to remove paint or slag, the NDE inspector has the authority, and is required by procedure, to request assistance from craft personnel to properly recondition the surface in order to prevent the possibility of indications being masked.

GAP #188, Petition at 9.

It is alleged that:

In 1982 Mr. Karner fired an inspector (citing 2/25/84 Anon. Aff. at 5.) who had protested that certain welds were not adequately prepared for magnetic particle testing. To illustrate the problem, despite claims on the paperwork, paint covering the welds was not fully removed. (citing 2/25/84 Anon. Aff. at 13-14, and related Exhibits would hinder his ability to inspect properly he was confronted by his own leadman, the other inspectors' leadman, a QC supervisor, and Karner himself. Within two weeks Mr. Karner fired the inspector (citing 2/25/84 Anon. Aff. at 14.)

48. Contrary to the allegation, no inspector has ever been fired for protesting that welds were inadequately prepared for MT testing.

49. The specific welds in question cannot be positively identified due to the lack of information provided. Any inspector, upon finding welds and adjacent base material inadequately cleaned or prepared for examination, simply needs to identify the condition to the craft personnel to get the problem resolved.

50. PGandE is aware of one incident which required Mr. Karner's involvement and which may have been the one referred to in the allegation. The incident in question did not involve paint on the welds themselves, but did involve paint on the base metal adjacent to the welds. The incident was resolved by instructing the inspector to identify the condition, together with the requirements of the procedure, to all parties.

including craft personnel and visual inspectors. The areas in question were then to be cleaned, if necessary, so inspections could be conducted. This was accomplished and all inspections were satisfactorily completed.

51. The inspector in question, Mr. J. L. McDermott, was indeed terminated on August 26, 1982, not for any quality problems he may have identified, but for habitual erratic job attendance and tardiness, as is documented in his personnel file.

NRC Allegations #0954 and 0955

Allegation #0954 Description:

PGandE responses about QC inspector qualifications contained disparities.

NRC Allegation Paraphrase:

PGandE letter DCL-84-082 states: "The NRC identified a number of welding inspectors who, prior to documentation of their qualifications, had apparently performed acceptance inspections. These inspectors did not perform NDE, but only performed fit-up and visual weld inspections". "...Reviews performed to this date indicate procedure (ESD-237) was fully implemented by June 1974."

PGandE letter DCL-84-115 states "After October 3, 1975, no inspectors were found to have performed inspection prior to documentation of qualification per ESD-237."

Allegation #0955 Description:

Two additional QC inspectors were not qualified.

NRC Allegation Paraphrase:

Same as 0954 - also, alleger states two names of individuals discussed in the letters. Alleger request reviews of two more individuals.

The issue discussed in PGandE letters DCL-84-082 and DCL-84-115, copies of which are attached, is the performance of acceptance inspections prior to documentation of the inspector's qualifications. Therefore, the allegation claiming that QC inspectors were not qualified does not address the same issue.

With respect to disparities, it is clear that DCL-84-082 is an interim response to the issue. Further investigations, as detailed in DCL-84-115, shows that the initial cutoff date was determined to be incorrect. This is a risk inherent in providing interim reports during ongoing investigations.

However, the information provided in the earlier response was believed accurate at the time of submission and does not call into question the truthfulness of either report on the date each was submitted.

The personnel records have been extensively reviewed by the NRC during their investigation of the NSL audit. As a result of the NRC investigation, an extensive review of the personnel records of the welding inspectors was performed by the Pullman training officer. The results of this review were accurately reported subsequent to DCL-84-082 in DCL-84-115. In addition, the personnel records of several specific individuals have been reviewed by NRC onsite representatives, Mr. Mendonca and Mr. Polich. Since the names of the two individual inspectors whose qualifications are of concern to the alleger have not been provided, no further investigation of the qualifications of the individuals is possible at this time.

PACIFIC GAS AND ELECTRIC COMPANY

COPY

February 29, 1984

PGandE Letter No.: DCL-84-082

Mr. John B. Martin, Regional Administrator
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Re: Docket No. 50-275, OL-DPR-76
Diablo Canyon Unit 1
SSER 21 - Item 23, Qualification of Pullman Inspectors

Dear Mr. Martin:

Enclosed is PGandE's response to Item 23 identified in SSER 21 pertaining to the qualification of Pullman Power Products quality control welding inspectors.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

J. B. Hoch

for J. O. Schuyler

DWOgden/GCW/JBH/JOS:gk
Enclosure

cc: T. W. Bishop
D. G. Eisenhut
H. E. Schierling
Service List

bcc: Diablo Distribution

0382d/0005K

PGandE Letter No: DCL-84-082

ENCLOSURE

DOCUMENTATION OF PULLMAN POWER PRODUCTS

WELD INSPECTOR QUALIFICATION

Request for Information

The NRC reviewed the findings resulting from a 1977 audit of Pullman Power Products (Pullman) performed by Nuclear Services Corporation (NSC). This review was conducted during the period from November 13th through November 18, 1983. The NRC identified a number of welding inspectors who, prior to documentation of their qualification, had apparently performed acceptance inspections. These inspectors did not perform nondestructive examinations but only performed fit-up and visual weld inspections.

The NRC has requested that PGandE review the Pullman welding inspector qualification program and report the results of this review to the NRC.

Response

Pullman began construction at Diablo Canyon in mid-1971. During the period from start of work through late 1973, weld inspector qualification and documentation of qualification was not formalized. An individual's qualifications were reviewed and accepted prior to assignment to inspection duties. The inspectors were indoctrinated and trained in accordance with QA and technical requirements. However, documentation of these activities was not consistently retained.

It should be noted that prior to September 1973, there was no requirement or guidance available within the industry directing the documentation of qualification or certification of inspection personnel. In late 1973, with corporate and onsite management involvement, Pullman, at its own initiative, began formalizing the process of weld inspector qualification. This effort resulted in the issuance and approval of Procedure ESD-237 in February 1974. Reviews performed to date indicate the Procedure was fully implemented by June 1974. This Procedure complies with ANSI N45.2.6 with the exception of establishing inspector levels. Beginning in early 1973, Pullman has been surveyed by the ASME a number of times and has been granted certificates of authorization indicating compliance with ASME code requirements including quality control activities.

In 1982, Procedure ESD-237 was modified to include identification of inspector level as a result of a PGandE QA audit and a contract specification change which required full compliance with ANSI N45.2.6.

A review of the NSC audit results indicates that, during the period from September 1973 through May 1974, certain inspectors did perform inspections prior to documentation of qualification. However, this condition was corrected in June 1974 by full implementation of Procedure ESD-237.

The NRC identified two inspectors who may have performed inspections prior to being adequately trained and qualified. These inspectors have been identified as Mr. Newton and Mr. Guy. PGandE's review of their records is discussed below.

Mr. Guy was hired on November 8, 1973, which was at a period when the program for training and documentation of qualification was being developed. Documentation exists which shows Mr. Guy's qualification to perform weld inspections after January 18, 1974. A sample of Mr. Guy's work performed prior to January 18, 1974 will be reinspected. This reinspection will be completed and the results will be reported to the NRC prior to March 30, 1984. A high level of confidence in the quality of the work to be reinspected is established by the fact that:

1. All code Class A, B, and C welds were inspected using NDE methods by qualified individuals in addition to the visual inspections performed by Mr. Guy.

2. In some cases, the welding inspection was witnessed by the Authorized Nuclear Inspector.

3. All Design Class 1 piping has been hydro-tested and, in some cases, reinspected for the base line data as a part of the Inservice Inspection Program.

Documentation exists which shows that Mr. Newton did not perform acceptance inspections prior to documentation of his qualifications. Therefore, no reinspection is required.

In addition, PGandE plans to review quality records prior to June 1974 to confirm that no other acceptance inspections were made prior to documentation of inspector qualification. Should any deviations be found, the basis for qualification will be established and documented, or reinspection will be performed. For the period following June 1974, a sample of inspection records and documentation of inspector qualification will be reviewed to confirm that no inspections were performed by inspectors prior to documentation of their qualification. These record reviews, and any resultant inspections, will be completed and the results reported to the NRC prior to power ascension.

PACIFIC GAS AND ELECTRIC COMPANY

COPY

March 23, 1984

PGandE Letter No.: DCL-84-115

Mr. John B. Martin, Regional Administrator
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Re: Docket No. 50-275, OL-DPR-76
Diablo Canyon Unit 1
SSER 21 - Pullman Power Products Weld Inspector Qualification

Dear Mr. Martin:

PGandE letter DCL-84-082, dated February 29, 1984 provided the NRC staff with an interim response to item 23 of Supplement 21 to the Safety Evaluation Report (SSER 21) concerning the qualification of Pullman Power Products (Pullman) weld inspectors. Also on February 29, 1984, PGandE received a Severity Level IV Notice of Violation concerning the performance of inspections by Pullman personnel prior to the documentation of their qualification as required by Pullman Procedure ESD-237.

The enclosure to this letter provides a description of PGandE's plan for additional investigation of Pullman weld inspectors and the results of this investigation. PGandE's response to the Notice of Violation will be provided by March 29, 1984.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

J. B. Hoch

for J. O. Schuyler

TWLibs/PFM/COC/JBH/JOS:lfs
Enclosure

cc: D. G. Eisenhut
H. E. Schierling
Service List

bcc: Diablo Distribution

0654d/0008K

ACTS #1520

PGandE Letter No. DCL-84-115

ENCLOSURE

PULLMAN POWER PRODUCTS WELD INSPECTOR QUALIFICATION

BACKGROUND

On February 29, 1984, in letter No. DCL-84-082, PGandE provided the NRC with an interim response to Item 23 identified in SSER 21. This response detailed the results of investigations of Pullman Power Products Weld Inspector Qualifications. Also, on February 29, 1984, PGandE received a Notice of Violation, Severity Level IV, directed to Pullman Power Products weld inspectors' performance of inspections prior to documentation of their qualification as required by Pullman Power Products Procedure ESD-237.

This report provides the results of additional investigations conducted to date
and this information is common to both requests for response. A separate response to the Notice of Violation will be provided by March 29, 2984.

RESPONSE

The scope and degree of the additional investigations has been expanded from that described in our previous submittal on this issue. The description of the revised plan and results of the additional investigation are described below.

Investigation Plan

A. Review the work experience and education records for all weld inspectors hired prior to September 1973 to verify qualification. Should qualification not be verified, all accessible welds will be reinspected.

B. Review documentation of weld inspector qualification and inspector assignments for all inspectors hired from September 1, 1973, to a point in time which assures that the requirements of ESD-237 were consistently implemented. Those inspectors found to have performed acceptance inspections prior to documentation of compliance with training and testing requirements will be identified for further review.

Should the inspector be considered qualified, based on work experience and education, 20% of the welds (but not less than 10 welds) will be reinspected to verify inspector qualification. The reinspection will be as thorough as possible and any potential defect will be identified for further review and disposition. Those welds which are inaccessible due to location or installation of heat tracing are excluded from reinspection unless the reinspection of accessible welds indicates unacceptable inspector performance.

Should the inspector not be considered qualified, based on work experience and education, all accessible welds will be reinspected.

C. A 10% sample of the records associated with inspectors hired after the date of consistent implementation of ESD-237 will be reviewed to assure continued compliance.

RESULTS

A. Four individuals were hired to perform weld inspections from the start of work through August 1973. All inspectors were shown to be qualified to perform visual weld inspection based on a review of documentation of previous work experience and education. No reinspection of their work will be performed.

B. Documentation of weld inspector qualification and inspector assignments was reviewed for all inspectors hired during the period from September 1, 1973, through December 1980. Seventeen inspectors were found to have performed inspections prior to documentation of completion of the training and testing required by ESD-237. After October 3, 1975 inspectors were found to have performed inspection prior to documentation of qualification per ESD-237. Four of these inspectors were hired prior to the requirement to document training and testing which was established by approval of ESD-237 on February 26, 1974.

Based on a review of documented previous work experience and education, all individuals except Mr. Guy and Mr. Cubbage were found to be qualified for weld inspection duties. A listing of the 15 inspectors considered qualified based on previous experience is provided as Attachment 1. For each inspector the following is identified:

1) No. of Inspections - The number of inspections performed prior to documentation of completion of training and testing requirements.

2) No. to be Reinspected - The number of welds to be reinspected to comply with the 20%, but not less than 10, sample specification.

3) Reinspected - The number of welds which have been reinspected.

4) Suspect - The number of welds found to require further inspection to determine acceptance or rejection. Weld items in this category include such items as minor arc strikes, 1/32" undersized welds on a small portion of weld circumference, and conditions which require further surface preparation. Of the 34 suspect welds shown in Attachments 1 and 2, four welds are in Class E (non safety-related) piping systems.

5) Repair - The number of welds found to require repair.

6) Comments - This column contains a description of the defect causing weld repair and a description of the affected line and service. Also, should reinspection of the full sample not be accomplished, justification will be provided.

The scope of inspections performed by Mr. Guy and Mr. Cubbage prior to documentation of qualification and reinspection results are shown on Attachment 2. The categories of data are identical to Attachment 1, except "No. to be Reinspected" is omitted since all accessible welds are to be reinspected.

C. One hundred seven individuals were hired to perform weld inspections during the period from January 1, 1981, to the present. A sample of the records for twenty-one inspectors indicated that all inspectors were documented to be qualified in accordance with ESD-237 prior to performance of inspections, with two exceptions. In both of these cases, documentation occurred one day following the first inspection. This is considered to be an administrative delay and the results provide confidence that the rquirements of ESD-237 have been fully implemented from October 3, 1975 to date.

ATTACHMENT 1

Name	No. of Inspections	No. to be Reinspected	Reinspected	Suspect	Repair	Comments
Allmendinger	69	30	30	1		
Bloom	2	2	2	0		
Bowlby	387	158	124	7		
Boyd	192	55	23	3		
Finch	289	114	114	7		
Jennings	423	85	28	2		
Kaz	3	3	0	-		
Kincade	84	17	0	-		
Page	195	39	15	0		
Pennie	294	59	6	0		
O'Brien	2	2	0	-		
Saruwatari	313	74	74	2		
Silver	47	11	11	0		
Thomas	17	10	4	0		
Willard	367	73	36	2		
TOTALS	2894	732	467	24		

"Suspect" welds are under evaluation. It has not yet been determined if any repairs are required.

ATTACHMENT 2

Name	No. of Inspections	Reinspected	Suspect	Repair	Comments
Guy	271	92	10		
Cubbage	23	0	-		
TOTALS	294	92	10		

NRC Allegation #0971

Allegation Description:

Carbon steel materials found in stainless steel hold areas.

NRC Allegation Paraphrase:

Quality manager's attitude was although an employee found the problem on Tuesday, the general foreman who inspects the areas on Friday will find it then.

Since the alleger has not provided any details to identify this incident, it is not possible to be certain PGandE is responding to the specific situation being referred to. However, the allegation is similar to a concern raised by Mr. Tim O'Neill through the PGandE Quality Hotline and addressed in QCSR-41, a copy of which is attached.

As a result of the investigation generated by the QCSR, it was determined that the area in question was a scrap bin and the material had been downgraded to non-Class 1 material. It was further determined that, although the material had been downgraded, it was not properly identified as non-Class 1. Pullman management's investigation found that this was not a widespread problem and sent memos to remind supervisors of the requirements for material storage.

There is no evidence that the quality manager's attitude was to ignore problems or delay their resolution and, in fact, the attached materials show just how thoroughly this concern was addressed.

DIABLO CANYON NUCLEAR POWER PLANT

GENERAL CONSTRUCTION

Attachment to
NRC Alleg. 0971
Page 1 of 38

QUALITY CONCERN SUMMARY REPORT

SUMMARY REPORT NUMBER

QCSR-041

SUBJECT: Uncontrolled Storage Area - Pullman Power Products

DESCRIPTION:

A. Class I and II carbon material, stainless steel and scrap material all stored together in one area.

B. All materials removed with a hold tag on material.

C. Inspector being pressured to void DCN because material cannot be found.

*A, B and C are the original concerns expressed on 5/8/84. See page 2 for the five subparts this concern has been divided into.

(Walk-in taken 5/8/84)

Investigation Performed by: (Department) Quality Control Investigator: D. Stetson

Coordinator: D. Stetson

Method of Investigation: (Plan of Action)

1. PPP to provide response to Mr. O'Neill's letter.
2. Q.C. Surveillance Inspection Group to perform inspection of scrap area.
3. Q.C. to evaluate findings.
4. Q.C. Supervisor to review.
5. Project Construction Coordinator to approve.

RESULTS OF INVESTIGATION:

See attached.

APPROVED & FINALIZED

Persons Contacted During Investigation: (Name/Title/Organization)

H.W. Karner/QA-QC Mgr/PPP

Ken Guy/PPP Q.C. Inspector

S. Engler/Supervisor/PPP

Bob Lieber/PTGC Field Const Mgr

Descrepancy Report Number (If Applicable) None

Investigator's Signature: D. A. Stetson Date: 7-31-84

P.T.G.C. Quality Control Supervisor Review: R A Holyoak Date: 7-31-84

General Office Project Construction Coordinator: J. A. Manning Date: 8/6/84

Attachments: See attached list

ORIGINAL

QUALITY CONCERN
SUMMARY REPORT

QCSR-041

SUBJECT (Con't from Page 1):

For clarification and simplicity, the original concern has been divided into five questions or sub-parts.

1. Uncontrolled storage areas.
2. Removal of material with affixed hold tags.
3. Voiding of DCN 1604-040.
4. The cost factor/and waste of materials.
5. Class I and II carbon material, stainless steel and scrap material all stored together in one area.

RESULTS OF INVESTIGATION

History

The following three basic types of storage areas are used at DCPP: 1) MANNED TYPE - (Warehouse/Vault Areas/Rod Control); 2) UNMANNED TEMPORARY CONSTRUCTION LOCATIONS - (Located at various locations on the site); and 3) SCRAP BINS AND OTHER SIMILAR AREAS. The first two types of storage areas are for construction materials prior to installation, and/or a place to temporarily hold any removed hardware during rework of hangers. The intent is to always control storage to avoid loss of traceability and protect damage to the material. As an added safeguard, almost all material purchased by PPP is designated and purchased as Class I material. This purchase policy has avoided many traceability or certificability issues in the past when small storage problems occur and retracing of the material purchase order is necessary.

The scrap metal areas which are governed by paragraph 11.5 of PPP QAI-152 is the last step to insure that good material separation and other Class I storage areas are maintained. The intent is to have any material placed in the temporary storage identified individually as scrap metal, which would by interpretation indicate to a passing observer and craft that the review of the material's worthiness for further use has been performed, and subsequently the material is deemed no longer needed. Furthermore, identifying each item as scrap, the possibility of a loose item being placed in Class I storage area may then be eliminated.

While the storage areas are a intergal part of the quality program, the key to the inspection program is the inspector's review of all material as it is installed. The inspection encompasses material condition, acceptability and appropriate documentation which can be traced to the tests and certification. The storage areas are a means for field Q.C. personnel and Production personnel to control and monitor material before the Quality Control Field Inspector is involved and the material is installed.

ORIGINAL

INVESTIGATION

As a part of the investigation, the following chronological events were established:

1. The caller, Mr. Tim O'Neill, stated he identified storage discontinuties during mid-February of 1984 and reported the problems to the PPP Q.C. Storage Inspector.

2. Approximately two weeks after the time first reported to the PPP Q.C. Storage inspector, Mr. O'Neill initiated DCN-1604-040 and placed a hold tag on a large diameter pipe. The PPP Deficient Condition Notice is dated March 2, 1984. (See attached DCN-1604-040).

3. Between April 19, 1984 and May 1, 1984, the PPP Quality Control Department tried to identify and take corrective action to Mr. O'Neill's observations.

4. On May 1, 1984, Lead K. Foelker directed Mr. O'Neill to see G. Biundo of PPP QA to discuss the voiding of the DCN. Mr. O'Neill declined voiding out the DCN.

5. Based on the fact that PPP was unable to substantiate the concern or locate the scrap area, the DCN was voided 5/2/84 without Mr. O'Neill's full concurrence. For the record, concurrence by the originator is not mandatory in Pullman's Quality Program, however, as a good policy PPP Management always seeks concurrence in such matters whenever possible.

6. On May 4, 1984, Mr. T. O'Neill wrote a letter to H. W. Karner the PPP QA/QC Manager on the "Uncontrolled Storage Area" matter. A copy was forwarded to the "Hotline Office". (See attached letter.) In this letter other observations by Mr. O'Neill were pointed out not mentioned in the original DCN.

7. May 8, 1984 Mr. O'Neill walked into the "Hotline Office" with his concern on this issue.

8. A letter was sent to P. Morky by H. W. Karner on May 29, 1984 to reiterate the storage of Class I material requirements and to remind all supervisors of their responsibility. (See attached letter.)

9. On June 6, 1984, H. W. Karner provided a response to Mr. T. O'Neill's May 4 letter. (See attached letter.)

10. On June 8, 1984 at the request of the "Quality Hotline," the PTGC Quality Control Surveillance Group performed an investigation of scrap material storage. (See attached SIR M-568.)

11. QCSR-041 represented the first of several Quality Concerns by the caller. In that time, first brought the concern to the Quality Hotline on May 8, 1984, the individual was contacted by telephone, visited by the Hotline Office or had a formal meeting. The dates recorded are as follows:

May 11, 1984	Caller was contacted and said he would drop off the DCN.
May 15, 1984	Called and visited the Hotline Office.
May 17, 1984	Visited the Quality Hotline.
June 12, 1984	Meeting with Caller.
June 13, 1984	Caller called Hotline and stated he felt good about the meeting on the previous day.
July 16, 1984	Called Mr. O'Neill and set-up conference with R. A. Hobgood.
July 24, 1984	Caller dropped by the Hotline Office on his way out and dropped off his resignation.

12. On July 16, 1984, Mr. R. A. Hobgood, PGandE Q.C. Supervisor, discussed this issue with Mr. O'Neill and presented the results of the Hotline's investigation (see attached letter).

1. Uncontrolled Storage Areas

After a difficult investigation of establishing what exactly occurred, it has been determined by PPP Management that the area described by the DCN was a scrap bin which had other material laying directly beside the bin. Piecing together the facts and Mr. O'Neill's testimony it was concluded by the "Quality Hotline" that the material in the bin was most likely not properly marked as "scrap" and was, therefore, a departure of QAI-152.

As stated in the chronology of events, at the request of the "Hotline Office", the PTGC Q.C. Surveillance Group has performed an inspection of some scrap material storage areas. (Reference SIR M-568) In addition, the Q.C. group has been performing surveillances of other storage areas throughout the plant as a portion of the Q.C. Surveillance Group's inspection agenda (attached are eight reports). Although minor problems were identified and corrected during the course of the surveillances, the surveillances revealed storage areas are being very well controlled and maintained within the prescribed procedures.

For the record, the scrap bins are in actuality non-Class I storage areas, since material disposed of do not require traceability any longer. In other words, once determined scrap, the material is automatically downgraded to non-Class I. The purpose of acknowledging scrap (i.e., marking it as scrap) is to clearly show material as being no longer useful for installation at DCPP and to avoid the confusion that has obviously occurred in this case.

ORIGINAL

Mr. Ken Guy per a telephone conversation with R. A. Hobgood stated he was not aware or remembered Mr. O'Neill informing him of a storage problem. As Mr. Guy stated, he was not aware of any problems or the actions taken by the caller until he noticed a hold tag on material and examined the DCN. (See attached message written by Mr. Guy on 5/8/84.)

2. Removal of Hold Tags

The area the hold tag was placed was determined by PPP and the Hotline Office to be a scrap bin and scrap overflow area. The material in scrap bins is removed by laborers and other crafts which do not normally work with Class I material, so to them or perhaps anyone else removing the material, the hold tag could have been interpreted as a part of the scrap. Subsequently, the removal of the hold tag is not reflective of the performance or quality of the material storage areas, nor should it be interpreted as a departure of the ESD's.

3. The Voiding of DCN 1604-040

As shown in the chronology of events, the Deficient Condition Notice 1604-040 was voided on May 2, 1984. The caller contacted the "Quality Hotline" on May 8, 1984 and later supplied a copy of the DCN on May 15, 1984.

The investigation revealed that the DCN was not complete, when comparing the DCN to the information supplied by the caller in his letter of May 4, 1984. If the additional information had been supplied prior to the DCN being voided out or conveyed on the May 1, 1984 meeting between the caller and the PPP QA representative, the DCN could have been revised to reflect the discontinuity of QAI-152 in lieu of being voided on May 2, 1984.

In the opinion of the "Hotline", the voiding of the DCN with the supporting documentation was not wrong. Since the DCN did not address the failure of not marking the material in question as scrap per QAI-152 and PPP could not locate the specific storage problem, no departure from the procedure could be substantiated. However, based on the assumption this condition could have existed, PPP elected not to avoid the problem but instead address the problem with a letter to the PPP Construction Superintendent reminding supervisors of their responsibility of QAI-152 and ESD-217 (see attached letter and portions of procedures). A rebuttal letter by George Biundo of PPP QA concerning the voiding of DCN 1604-040 and the originator's response was issued on May 11, 1984 and explains the events in detail. (See attached letter.)

4. The Cost Factor/and Waste of Materials

PGandE as the operator, owner, designer and builder of the plant is very conscious of material costs and strives in many ways to curb waste of any kind. The caller's concern of material cost and waste is understandable and also a priority of PGandE management. While the specific material identified cannot be addressed, a general understanding of the power plant's construction process throughout the industry is important.

ORIGINAL

As R. Lieber, the General Construction Manager of PTGC stated, "Much of the hanger work and associated Q.C. inspections is labor intensive. Therefore in rework or modifications or new construction, sometimes the disposal of existing material and beginning anew is important and can be far more cost effective. In the event an elbow, pipe or other hardware should not be traceable, the material will be either used as non-Class 1 or disposed of. The storage of material, particularly Class I material even costs in terms of overhead and monitoring costs. Again, it is sometimes many more times cost effective to dispose of material in such cases. These materials are then placed in scrap areas (not as trash) and later sold as scrap or separated and sold as piping, etc. PGandE has monitored the scrap bins in the past to reduce the chance of waste."

5. Class I and II Carbon Material, Stainless Steel and scrap material all stored together in one area.

The storage in a scrap bin of formerly Class I, non-Class I, and dissimilar material, such as carbon and stainless in one storage area does not constitute a problem in itself. Since the material is scrapped, the separation of the material is not deemed necessary providing the material has been permanently identified as scrap. It should be noted that the segregation of Class I and II material is very important to this Project as evidenced by numerous storage procedures, continuous inspections, surveillances and audits on storage, and countless dollars spent on physically segregating material. In the opinion of the Hotline Office should this have proven, however, to be a segregation problem, based on the material itself and the area the infraction may have occurred, the impact on the quality of installation would be extremely minimal.

CONCLUSION

Based on a thorough investigation of the caller's concerns, PPP's actions taken and the significance of the problem, the Hotline Office has concluded although it is possible a minor storage problem occurred, no hardware related problems resulted from it. Numerous surveillances of PPP storage areas reveal a general adherence to storage procedure. On the specific issues, the Hotline has concluded and provides the following:

1. The scrap area concern and series of events do not indicate that the storage areas of Class I material are out of control or have any serious impact on material traceability.

2. Tagging of a scrap material bin and removal of the hold tag is not a departure of the Quality Program with an understanding of the cause.

3. DCN 1604-040 was voided correctly. Since the condition stated could not be found, no violation existed to warrant a DCN. However, since the condition could have been a problem, a letter was forwarded to Paul Morky on May 29, 1984 from H. W. Karner addressing the importance of the storage of Class I material, the marking of scrap and the separation of carbon and stainless steel. (See attachment to DCN 1604-040.) Pullman Power Products exerted a great deal of effort to convey the reasoning that the DCN should be voided by the originator before exercising the Management's option of voiding out the DCN themselves. (See G. Biundo letter attached.)

4. Statements that the Q.C. Inspector in charge of Class I material was aware of the problem before the DCN was documented is contrary to what the Inspector, Ken Guy, has stated. Mr. Guy had expressed little knowledge of Mr. O'Neill's actions. Based on the fact that Mr. Guy was not the originator of the DCN, it is understandable that he would not have been involved closely in the disposition and actions taken to resolve the scrap area storage.

RESPONSE TO CALLER

On July 16, 1984, Mr. R. A. Hobgood met with Mr. O'Neill and discussed the issues and findings of the investigation. The caller had been made aware of the investigation status on several occasions by the Q.C. Hotline Representatives. Unfortunately, Mr. O'Neill was not totally satisfied with our appraisal and final position on his concern. He did not, however, express an interest in taking the issue to higher management when this option was discussed with him.

ATTACHMENTS

1. DCN 1604-040.
2. Harold Karner to T. O'Neill, letter dated June 6, 1984.
3. Attachment to DCN 1604-040 and attachments.
4. Harold Karner to Paul Morky, letter dated May 29, 1984.
5. Surveillance Inspection Report M-462.
6. Surveillance Inspection Report M-488.
7. Surveillance Inspection Report M-489.
8. Surveillance Inspection Report M-490.
9. Surveillance Inspection Report M-527.
10. Surveillance Inspection Report M-538.
11. Surveillance Inspection Report M-551.
12. Surveillance Inspection Report M-568.
13. T. O'Neill to H. W. Karner, letter dated May 4, 1984.
14. Ken Guy, Memo to File dated 5/8/84.
15. George Biundo Letter dated May 11, 1984 for DCN-1604-040 comments.
16. Memo to File by R. A. Hobgood dated July 17, 1984.
17. Memo to File by R. A. Hobgood dated July 28, 1984.

ORIGINAL

1.1-124

DEFICIENT CONDITION NOTICE

Attachment to NRC Allegation 0977 3/6/84

UNIT #	AREA	ELEV.	COL/LINE	DATE:	NOTICE NO.
TWO	A	85	SOUTH FENCE	3/2/84	1604-040

DEFICIENT CONDITION: WHILE PERFORMING ROUTINE AREA SURVEILLANCE, INSPECTOR NOTED AN UNCONTROLLED LAYDOWN/STORAGE AREA LOCATED AT THE SOUTH FENCE ENTERING UNIT TWO, AND WROTE THIS DCN FOR THE FOLLOWING CONDITIONS.

1) STAINLESS STEEL STORED WITH CARBON STEEL, IN A BOX CONTAINING CARBON STEEL LARGE AND TEE WITH CLASS I PURCHASED STAINLESS ELBOW & VALVE FITTINGS. THIS IS A VIOLATION OF FSD 215 PARA. 5.14. ADDITIONALLY, A CUT-OUT SECTION OF S.S. PIPE BEARING W 3891 AND 3892, CLASS I MATERIAL, IS STORED WITH CLASS II CARBON STEEL PIPE. CLASS II STAINLESS PIPE IS ALSO STORED WITH CLASS II CARBON STEEL PIPE IN THIS AREA.

2) STORAGE AREAS ARE NOT ROPED OFF AND IDENTIFIED AS CLASS I OR CLASS II. PIPE STORED IS ON CRIBBING

ORIGINATOR'S SIGNATURE: Timothy A. O'Neill 1604

HOLD TAG APPLIED: YES | TAG # 040 | INITIALS TAO | DATE 3/2/84

RECOMMENDED DISPOSITION:

1) SEGREGATE CLASS I AND CLASS II MATERIALS INTO APPROPRIATELY IDENTIFIED STORAGE AREAS.

2) SEGREGATE STAINLESS STEEL MATERIALS FROM CARBON STEEL MATERIALS.

ENGR & Q.C. VERIFY ANY PHYSICAL, CHEMICAL (REACTION FOR DISSIMILAR METALS) CHANGES; TEMPORARY OR PERMANENT AND ATTACH TO THIS DCN FOR FURTHER INVESTIGATION. FIELD Q.C. SUPERVISOR TO INSTRUCT APPLICABLE PERSONS TO ROPE-OFF AREAS AND IDENTIFY AND

FIELD ENGINEER Stuart Young TAO

FIELD QC INSPECTOR DLF 3-5-84 Timothy A. O'Neill 1604 3/5/84

CHIEF ENGINEER Vinod R Patel 4-19-84 VRP 4-19-84

LEVEL III

FIELD QA/QC MANAGER W K McFetters

FIELD QA/QC MANAGERS EVALUATION: ☒ APPROVED AS RECOMMENDED ☐ OTHER

☐ NON-CONFORMANCE - D.R.# ____

☐ REPAIR ORDER

☐ REWORK/REINSPECT

☐ INTERNAL AUDIT

☒ OTHER THIS DCN VOID 5-2-84

CAUSE CODE 3

COMMENTS: → SEGREGATE PER CLASS I & II REQUIREMENTS OF FIELD STORAGE PROCEDURES PERMANENTLY. VRP 4-19-'84

ON FURTHER INVESTIGATION IT WAS DISCOVERED FROM FIELD Q.C. LEAD (ATTACHED MEMO) THAT THE DCN COULD BE VOIDED BECAUSE OF SCRAPING OF MATERIAL IN QUESTION VRP 4-20-84

DATE 4/23/84 | FIELD QA/QC MANAGER W K McFetters

CORRECTIVE ACTION REQUIRED BY: CRAFT JUPY | NOT LATER THAN:

STEPS TO PREVENT RECURRENCE: ☐ NOT APPLICABLE

N/A FOR Q.C. DLF 3-5-84

N/A FOR ENGINEERING S.Y. 3-5-84

ATTACHMENT (1)

RESPONSIBLE SUPERVISOR	DATE	FIELD QA/QC MANAGER
DEFICIENT CONDITION CLOSED:	DATE	SIGNATURE:

1.1-124

5-1-84

NOTES FOR REVIEW OF DCN-1604-040

A REVIEW OF THIS DCN HAS UNCOVERED THE FOLLOWING INFORMATION

1) THE MATERIAL REFERED TO IN THIS DCN HAS APPERANTLY SCRAPED.

2) IN A REVIEW OF THE INFORMATION CONTAINED THEIR IS NO P.O# OR HEAT # IN THE BODY OF THIS DCN EVEN THOUGH THE ORIGINATOR INFORMS ME THAT THIS INFO WAS AVAILABLE AT THE TIME HE WROTE THIS DCN

3) FROM THE TIME THIS WAS WRITTEN TO NOW WE HAVE NO OBJECTIVE EVIDENCE OR WAY OF TRACING THIS MATERIAL BACK TO ITS SOURCE

4) THE AREA IN QUESTION ACCORDING TO THE ORIGINATOR WAS AN UNCONTROLLED MATERIAL STORAGE. THE DESCRIPTION OF THIS AREA AND ITS ACTUAL LOCATION AS OF 5-1-84 COULD NOT BE ~~AT~~ VERIFIED

5) THE REFERENCE TO TESD-215 PARA. 5.14 IS NOT APPLICABLE THIS TESD- WAS REVISED ON 2-1-84 AND THE DCN WAS WRITTEN ON 3/2/84

(1) Page 2

Continued

CONTINUED FROM PAGE #1

5-1-84

NOTES FOR REVIEW OF DCN 1604-040

CONCLUSION

I HAVE TALKED TO THE ORIGINATOR IN THE PRESENCE OF RANDY KING AND HIS SUPERV LEAD Steve Taylor AT THIS TIME WE ASKED HIM TO VOID THIS DCN SINCE WE IN NO WAY ~~HAVE~~ OF TRACKING EITHER THE MATERIAL OR PERSONS RESPONSIBLE FOR STORAGE OR REMOVAL.

THE ORIGINATOR HAS INFORMED ME THAT WE MAY VOID THIS DCN. HE WILL NOT / ALSO HE INDICATED THAT EVEN IF I HAD A HEAT AND P.O # THAT WE WOULDNOT BE ABLE TO TRACE THIS MATERIAL BACK THROW THE WAREHOUSE REQ. THIS IS A MISS STATEMENT WITH THAT INFORMATION AND SOME TIME I COULD HAVE FOUND OUT FOR SURE ~~FOR~~ IF WE HAD SCRAP. OR GOOD MATERIAL AND WHOM WAS RESPONSIBLE FOR THIS STORAGE.

'AT THIS TIME CONSIDERING ALL OF THE ABOVE I FEEL WE HAVE NO CHOICE BUT TO VOID THIS DCN.

George Beinil

(1) Page 3

ATTACHED ARE COPIES OF THE EFFORT WE HAVE CURRENTLY PUT INTO THIS DCN

PULLMAN POWER PRODUCTS CORPORATION

JOB #7177
AVILA BEACH, CALIFORNIA 93424 • (805) 595-2356

MESSAGE

TO: JEFF CHARBONEAU QC
TRANSMITTAL DCN 1604-040

DATE: APRIL 30, 1984

– JEFF

PLEASE FIND OUT WHOM & HOW THIS MATERIAL WAS REMOVED WHEN A HOLD TAG HAD BEEN APPLIED; ALSO WHAT IS THE PRESENT LOCATION OF MATERIAL? HAS IT BEEN SCRAPPED?

BY: G. BRUNDO Ext 3644

REPLY

For Frank
4/30/84
Steve [illegible] informs me they cannot determine when in CRDR [illegible] Removed Scrap material with a Hold tag
G.B.

CIRCLE FOLLOW-UP DATE AND FILE

MONTH	J	F	M	A	M	J	J	A	S	O	N	D
DAY	1	2	3	4	5	6	7					
	8	9	10	11	12	13	14	15				
	16	17	18	19	20	21	22	23				
	24	25	26	27	28	29	30	31				

SIGNED ______

DETACH AND FILE FOR FOLLOW-UP

(1) Page 4

4/27/92

QC to investigate & find out who removed material and while it is now. Where is hold tag STPR needed for moving with hold tag attached

MEMO FROM
FIELD Q.C. LEAD.

Per QAI 152
para 12.1.2
should ~~class~~ scrap or
return to NON-Class I

could not identify who removed material or when, also could not verify what system it belongs. Talking to Superintendant of area and General Foreman of start-up leads me to believe this material was intended to be scrap.

ESD 215 para. 5.14 does not exist at present time. QAI 152 para. 11.5 or para 12.1.2 should have been followed but were not. I recommend scrapping of material in question. 4/13/84

(1) Page 6

P.P. & E Quality Hotline

INTEROFFICE CORRESPONDENCE

Attachment to
NRC Allegation 0971
Page 14 of 38

DATE JUNE 6, 1984

TO TIM O'NEILL

FROM HAROLD KARNER

SUBJECT YOUR LETTER DATED MAY 4, 1984 IN REFERENCE TO DCN 1604-040

In response to your letter and the concerns that you have identified, I provide the following comments:

You state that for approximately 2 weeks, you noticed material stored in an uncontrolled manner and indicate that Ken Guy was advised about the situation. This is appropriate, as Mr. Guy is responsible for job site monitoring of storage areas.

Since you noticed that action had not been taken by Mr. Guy after approximately one week, the appropriate action would be to identify this condition to your lead or supervisor so more appropriate action could be taken.

I find an inconsistency in your letter where you indicate that you did not have the time to identify this condition to production supervision, but you did have time to review CMTRs and purchase order invoices in the warehouse. Again, very little time would be required to identify the condition to your lead or supervisor.

Your letter provides extremely more detail than the original DCN, which more appropriately should have been included with the DCN, such as the fact that some of the items were marked "scrap." From your descriptions, or explanation, I am not sure how it was determined what material was Class I and what, indeed, was Class II, since the area was not roped off or marked. It is not indicated that the items themselves were marked Class I and Class II. The fact that an item has a heat number does not automatically mean it is Class I.

Your conclusions that other personnel within this organization are circumventing corrective action and pressuring you to void the DCN is not appropriate since the explanation of the reason for voiding, as well as the details of the investigation conducted, became and are a part of the permanent record. Additional investigation was performed by warehouse QA personnel to locate the material both in the scrap yard and the laydown areas. Material was not located.

ATTACHMENT (2)

DATE JUNE 6, 1984

TO: TIM O'NEILL

SUBJECT: YOUR LETTER DATED MAY 4, 1984 IN REFERENCE TO DCN 1604-040

PAGE NO. 2 -

I personally do not agree with the conclusion that we regularly circumvent approved procedures, nor do I feel that the QA group circumvented or intended to circumvent the approved procedures, but merely tried to obtain answers to questions they had. Careful consideration is given, and will be given, to every document that is voided, with clear explanations as to the reason for the dispositions.

In regard to your final note or comments concerning the conversation with QA personnel, these can only be understood to be part of the general conversation. It is neither yours nor Mr. Biundo's responsibility to determine the manpower requirements of the QA/QC Department. Since this matter was discussed with Mr. Engler, Mr. Lyautey, Mr. Biundo and Mr. King, this issue will be considered closed.

Harold W. Karner
QA/QC Manager

HWK:sam

cc: File
S. Engler
PG&E Quality Hotline
DCN 1604-040

(2)

ATTACHMENT TO DCN 1604-040

The DCN was voided and signed in agreement with appropriate management personnel. The items in question could not be located as stated in part of the attachments to the DCN. Every effort was made to rectify the conditions noted. In addition, a memo has been sent to Paul Mokry requesting him to remind all superintendents, general foremen and foremen of their responsibilities for identification for storage of material. No further action will be conducted at this time. Copy of this memo and the letter to Paul Mokry will be attached to this DCN.

Harold W. Karner
QA/QC Manager

6-6-84
HWK:sam

cc: Tim O'Neill
PG&E Hotline w/attachment
S. Engler

ATTACHMENT 3

8.0 Class I Pipe Support Material Withdrawal -- See ESD 223

9.0 Structural Materials -- See ESD 201

10.0 Class I Material Control During Erection or Storage In Work Area

11.0 Control of Issued Class I Material Not Being Returned to the Warehouse, Yard, or Source

11.1 Issued materials shall remain under control of the Foreman and General Foreman, unless they are returned as specified further. These controls shall cover materials being dismantled for maintenance, testing, flushing, repairs, etc., and shall insure that traceability and documentation will not be impaired. Controls, as specified herein, are not applicable when installed materials, such as valves, pump flange bolts, etc., are dismantled for any reason by PG&E personnel or other contractor.

11.2 Items remaining at the location of erection, (bolts or other loose materials dismantled after installation), shall be secured and/or bagged and tied off at the erection location. They shall not be left scattered on the floor or tucked away in beam flanges or other pockets.

80 11.3 Items available for installation but not being worked shall have a copy of the requisition ticket maintained by the General Foreman or his designee pending installation of the material. All loose materials shall be identified as to where it will be installed (i.e. Hanger #, RR #, ISO # ...). All tags shall be marked to identify them with the open requisition ticket. Materials shall be stored in a secure area posted with Class I signs. The General Foreman or his designee shall maintain surveillance of stored materials and open tickets to insure that items are not used elsewhere and also to prevent reordering materials previously issued. The General Foreman or his designee shall periodically reconcile quantities used, quantities stored, and quantities returned to the warehouse with the open tickets.

22/80 11.4 Installed Material to be Removed and Reinstalled -- Class I material which will be cut out per Engineering authorization and which will be reinstalled shall be handled as follows:

A. Material requisitions will be made and QC verified prior to cut out listing all items to insure proper Class I traceability. The requisition will be attached to the reweld process sheets by the Field Engineer.

2/80 B. Install an Engineering "Hold Tag" on the material listing where it is to be reused and insure that the material is placed in a Class I Hold Area.

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FOR INFORMATION ONLY

11.5 Scrapping of Installed Material -- Material which is to be removed and scrapped per Engineering authorization must have the word "Scrap" put on the items with metal marker and moved to a scrap bin.

12.0 Control of Class I Materials Being Returned to the Warehouse, Yard or Source

12.1 All issued Class I material being returned, prior to installation should be accompanied by a copy of the requisition ticket, marked up for the items and their disposition. An additional sheet may be attached if more room is needed to explain the disposition, etc. Control of these functions is the responsibility of the General Foreman and the Superintendent.

12.1.1 In addition to instructions to warehouse or shop, one or more of the following dispositions shall be indicated:

A. Return to Class I stock.

22/80 B. Return to Non-Class I stock.

22/80 C. Return to Vendor or PG&E.

12.1.2 The warehouse shall verify that all items being returned are correctly indicated as to disposition.

The Q.A. Receiving Inspector shall verify that the items have traceability to heat and/or to P.O. number(s) and are undamaged prior to returning to Class I stock. Disposition of items not meeting this criteria shall be to scrap or place in the Non-Class I stock. The warehouse shall correct the return tickets when needed, and turn them over to Q.A.

12.1.3 See ESD 202 for welding materials and ESD 223 for snubbers.

12.2 Installed material that is to be dismantled and returned to the warehouse, yard, or source, requires authorization of the Field Engineer. Rework must be authorized by one or more of the following DR, ASWR, RRO, Erection Drawing Revision, etc.

2/80 12.2.1 A return document (i.e. material requisition) shall be prepared by the Field Engineer or his designee to accompany the removed items. This document shall list the items and their disposition, including an adequate description, but not less than the following:

2/80 A. Return to Class I Storage -- Q.A. Receiving Inspector to verify that the items have traceability to heat and/or P.O. number(s) and are undamaged prior to returning to Class I storage.

B. Return to Non-Class I storage.

C. Return to Vendor or PG&E.

(3) Page 3

FOR INFORMATION ONLY

Pullman Power Products

EDD-217

PREPARED BY: R. Fink	APPROVED BY: H. Karner	DATE: 9-23-71	SECTION NO.
DIABLO CANYON NUCLEAR POWER PLANT	TO BE USED ONLY ON JOB # 7177	PAGE NO. 2 of 5	

-14-80

4.0 NOTIFICATION OF RECEIPT

4.1 Form F-75, Daily Report of Material Received, (Attachment A) shall be prepared by the assigned Field QA Inspector and forwarded to the following:

Resident Construction Manager
Purchasing Agent
Chief Engineer
Authorized Nuclear Inspector
Production Superintendent
Warehouse Foreman
Hanger Engineering Supervisor
Field Engineers as required

-6-84

5.0 Class I Material Storage

5.1 Only Class I material shall be stored in a Class I area.

5.2 Permanently Mounted Signs (i.e., taped to a wall, on a stand, etc.,) stating PPP Class I Material" or "PPP Class I Hold Area" as the case may be, shall be clearly visible. Signs shall not be laying on the ground, wired to the material, leaning against a component, broken, etc.

5.3 Class I area must have clear boundaries. If Class I components are adjacent to other components; this boundary shall be marked by a suitable method (i.e., rope, tape on the deck, etc.).

5.4 All Class I loose material, 2" and under, such as random fittings, valves and pipe, in addition to being identified as PPP Class I, shall have a copy of the requisition visible for identification.

5.5 All material in PPP Class I "Hold" areas shall be identifiec by a "Hold sticker explaining the reason for the hold.

5.6 All material Class I and non-Class I shall be stored on dunnage. All pipe openings shall be capped.

5.7 Stainless steel (P-8 material) and carbon steel (P-1 material) shall be segregated in storage.

FOR INFORMATION ONLY

(3) Page 4

Same

INTEROFFICE CORRESPONDENCE

Attachment to
NRC Allegation 0971
Page 20 of 38

DATE MAY 29, 1984

TO PAUL MOKRY, CONSTRUCTION SUPERINTENDENT

FROM HAROLD KARNER, QA/QC MANAGER

SUBJECT STORAGE OF CLASS I MATERIAL

Please remind all superintendents, general foremen and foremen of their responsibility in the requirements for storage of Class I material, both prior to installation and after removal. All Class I storage areas shall be identified as such with appropriate signs. Material that is to be scrapped shall be clearly marked and stored in appropriate containers. Stainless steel and carbon steel must be stored separately.

The requirements for material storage are detailed in QA Instruction 152 and ESD-217.

Cooperation of all personnel is mandatory in complying with these referenced procedures. See information copies of ESD-217, page 2 and QAI-152, pages 3 and 4. Please indicate, in writing, on the attached training sheet the completion of the distribution of this letter and/or additional instruction to all supervisors, general foremen and foremen.

Harold W. Karner

Harold W. Karner
QA/QC Manager

HWK:sam
attachments
cc: P. Stieger
S. Engler
File

ATTACHMENT 4

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Attachment to
NRC Allegation 0971
Page 21 of 38

cc Palmer
Meredith

PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

SURVEILLANCE INSPECTION REPORT

SCOPE: Surveillance Inspection of Class I Material Storage for Compliance to ESD 261

Report No. M-462
Page 1 of 1
Unit 2

Contacts: K Guys — Org./Title: PPP CX

Organization Surveyed: Pullman Power Products

Date(s): 4-26-84 thru 5-2-84

SURVEILLANCE

Items inspected: Class I material including beam Plates & flat bar

Location Aux 85' GW Near J & 24 lines

Documentation reviewed: ESD-261

RESULTS

☒ Acceptable as corrected during course of survey
☐ Acceptable as inspected
☐ Discrepancies identified

Discrepancies: Material Stored with out Class I Storage Signs in View

Conclusions/Remarks: Contractor has corrected the discrepancy noted above in accordance with approved procedures.

Performed by: [signature] Date: ~~4-26-84~~ 5-2-84 [initials]

☐ Attachments NA

Date:

Reviewed by: R.A. Hobgood Date: 5/2/84
Supervising Q.C. Engineer

QA-31A (9/28/83)

n/a Follow up Inspection will be necessary

PRIORITY No. 4

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cc: [illegible]

PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

Attachment to
NRC Allegation 0971
Page 22 of 38

SURVEILLANCE INSPECTION REPORT

SCOPE: Surveillance Inspection of Class 1 Storage Area's for compliance to ESD 261

Report No. M-488
Page 1 **of** 1
Unit 2

Contacts: K. Grays — **Org./Title** PPP QC

Organization Surveyed
Pullman Power Products

Date(s): 5-07-84

SURVEILLANCE
Items inspected: Class 1 Storage Area

Location: Near 21 & H lines on Elev. 85±

Documentation reviewed: ESD-261

RESULTS

- [X] Acceptable as corrected during course of survey
- [ ] Acceptable as inspected
- [ ] Discrepancies identified

Discrepancies: Pipe restraint material is stored with out a Class 1 Storage Material sign.

Conclusions/Remarks: The above noted discrepancy was corrected according to approved procedures

Performed by: M. Woodward **Date:** 5-08-84 [A] **Attachments**
NA

5/8/84

Date: ______

Reviewed by: RA Hobgood **Date:** ______
Supervising Q.C. Engineer

[NA] Follow up Inspection will be necessary

PRIORITY No. 4

QA-31A (9/28/83) REV.

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PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

Attachment to
NRC Allegation 0971
Page 23 of 38

SURVEILLANCE INSPECTION REPORT

SCOPE: Surveillance Inspection of Class 1 Material Storage for Compliance to ESD 261

Report No. M-489
Page 1 of 1
Unit 2

Contacts:	Org./Title
K. Guys	PPP QC

Organization Surveyed
Pullman Power Products

Date(s): 5-07-84

SURVEILLANCE
Items inspected: Class 1 Material Storage

Location: Near 30 line, 20" E of V. on 115 Elev.

Documentation reviewed: E.S.D. - 261

RESULTS

☒ Acceptable as corrected during course of survey
☐ Acceptable as inspected
☐ Discrepancies identified

Discrepancies: Barricades and signs were not in place

Conclusions/Remarks: The above noted discrepancies were corrected in accordance with approved procedures

Performed by: [signature] Date: ______ NA Attachments

Date: ______

Reviewed by: [signature] Date: ______
Supervising Q.C. Engineer

N/A Follow up Inspection will be necessary

PRIORITY No. 4

QA-31A (9/28/83) REV.

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PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

Attachment to
NRC Allegation 0971
Page 24 of 38

SURVEILLANCE INSPECTION REPORT

SCOPE: Surveillance Inspection of Class 1 material Storage for Compliance to ESD-261

Report No. M-490
Page 1 of 1
Unit 2

Contacts:

Name	Org./Title
K. Kruvs	PPP QC
D. Mallory	PPP "F"
H. Kyzar	PTGC "S"

Organization Surveyed: Pullman Power Products

Date(s): 5-07-84

SURVEILLANCE

Items inspected: Class 1 Material Storage

Location: Area "10"

Documentation reviewed: ESD-261

RESULTS

☒ Acceptable as corrected during course of survey
☐ Acceptable as inspected
☐ Discrepancies identified

Discrepancies: Signing and barricades need straightening. The "Material Hold" area is not seperated from the Class 1 Material Storage Area

Conclusions/Remarks: The Contractor has Corrected the above noted discrepancy according to approved Procedures

Performed by: [signature] Date: 5-07-84 ☐ N/A Attachments

Date:

Reviewed by: [signature] Date: 5/10/84
Supervising Q.C. Engineer

QA-31A (9/28/83) REV.

☐ N/A Follow up Inspection will be necessary

PRIORITY No. 4

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PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

SURVEILLANCE INSPECTION REPORT

SCOPE: Surveillance Inspection of Class 1 Material Storage Area for compliance to ESD 261

Report No. M-527
Page 1 of 1
Unit 2

Contacts: K. Guys — Org./Title: PT&C

Organization Surveyed: Fullerton Power Products

Date(s): 5-21-84

SURVEILLANCE
Items inspected: Class 1 Material, Bumpers

Location Containment 2 Elev 91' AZ 90° 50'

Documentation reviewed: ESD 261

RESULTS
☒ Acceptable as corrected during course of survey ☐ Acceptable as inspected ☐ Discrepancies identified

Discrepancies: Bumpers fixed with Insulation

Conclusions/Remarks: The contractor has corrected the discrepancies noted above in accordance with approved procedures

Performed by: [signature] Date: 5-22-84 ☒ Attachments 2

Reviewed by: [signature] Supervising Q.C. Engineer Date: 5/24/84 Date: 6

☒ Follow up Inspection will be necessary

PRIORITY No. 4

QA-31A (9/28/83) REV.

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PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

SURVEILLANCE INSPECTION REPORT

SCOPE: Surveillance Inspection of Class 1 Storage Area's for compliance to ESD-261

Report No. M-538
Page 1 of 1
Unit 2

Contacts: K. Grays — Org./Title: PPP Q.C.

Organization Surveyed: Pullman Power Products

Date(s): 5-23-84

SURVEILLANCE
Items inspected: Three boxes of Class 1 Hilti Anchors were in a Non-Class 1 Storage area
Location Aux Bldg area 85'

Documentation reviewed: ESD-261

RESULTS
☒ Acceptable as corrected during course of survey ☐ Acceptable as inspected ☐ Discrepancies identified

Discrepancies: Class 1 anchor bolts in a Non-Class 1 Storage area. There is a Violation of ESD 261

Conclusions/Remarks: The contractor has corrected the discrepancy in accordance with approved procedures

Performed by: [signature] Date: 5-23-84 ☒ N/A Attachments N/A

Reviewed by: [signature] Supervising Q.C. Engineer Date: 5/26/84 5 7

☒ N/A Follow up Inspection will be necessary

PRIORITY No. 4

QA-31A (9/28/83) REV.

PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

SURVEILLANCE INSPECTION REPORT

SCOPE: Surveillance Inspection of Class 1 material Storage for compliance to ESD-261

Report No. M-551
Page 1 of 1
Unit 2

Contacts: R. Gays — Org./Title: PPP QC

Organization Surveyed
Pullman Power Products

Date(s): 5-18-84 to ~~5-22-84~~ DLO 5-30-84

SURVEILLANCE
Items inspected: Steel plates for hangers were improperly stored

Documentation reviewed: ESD-261

RESULTS

- [X] Acceptable as corrected during course of survey
- [ ] Acceptable as inspected
- [ ] Discrepancies identified

Discrepancies: Material stored inside web of column, outside of a proper storage area

Conclusions/Remarks: The contractor has corrected the Discrepancies noted above according to approved Procedures

Performed by: [signature] Date: 5-30-84 DLO ~~5-22-84~~ — [N/A] Attachments: NA

DLO — Date:

Reviewed by: BAHolzgood Date: 5/31/84
Supervising Q.C. Engineer

QA-31A (9/28/83) REV.

[N/A] Follow up Inspection will be necessary

PRIORITY No. 4

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DIABLO CANYON PROJECT

SURVEILLANCE REPORT

Attachment to NRC Allegation 0971
Page 28 of 38

ORGANIZATION	UNIT	PAGE	REPORT NO.	REV.
Gilbert Power Products	2	1	M-568	0
DISCIPLINE: Mechanical	TRENDING CATEGORY: P-I-O	OF 1	DATE PERFORMED: 6-08-84	

SCOPE: Investigate reason for Hot Line Quality Concern Phone Call on Scrap Material

ITEMS/DOCUMENTS SURVEYED: Checked a Trash Bin used only for Scrap Metal in Turbine Bldg 140 elev. 21 & C lines

PERSONS CONTACTED/TITLES:

K. Guys	PPP Q.C.
D. Clark	PPP QC

RESULTS:

☑ ACCEPTABLE AS CORRECTED DURING SURVEY ☐ ACCEPTABLE AS SURVEYED ☐ DISCREPANCIES IDENTIFIED DISCREPANCY REPORT NO'S

DISCREPANCIES:

Pieces of removed hangers were cut up and placed in the bin without writing the word, Scrap, on them. This is not in compliance with PPP QAI #152 Paragraph 11.5

DISPOSITION/CONCLUSION:

The unmarked pieces were marked Scrap. by PPP QC materials Storage Inspector as required by QAI # 152, paragraph 11.5 This resolves the above discrepancy

☑ ATTACHMENTS: Page 4 of QAI #152

PRIORITY 4
☐ FOLLOW-UP REQUIRED

V.	DATE	INSPECTOR	DATE	QC. INSPECTION SUPERVISOR	DATE	Q.C. SUPERVISOR
0	6-08-84	[signature]	6/8/84	[signature]	6/9/84	[signature]

QA 31A 5-7-84 (Rev 2)

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✓ 144

11.5 Scrapping of Installed Material -- Material which is to be removed and scrapped per Engineering authorization must have the word "Scrap" put on the items with metal marker and moved to a scrap bin.

12.0 Control of Class I Materials Being Returned to the Warehouse, Yard or Source

12.1 All issued Class I material being returned, prior to installation should be accompanied by a copy of the requisition ticket, marked up for the items and their disposition. An additional sheet may be attached if more room is needed to explain the disposition, etc. Control of these functions is the responsibility of the General Foreman and the Superintendent.

12.1.1 In addition to instructions to warehouse or shop, one or more of the following dispositions shall be indicated:

A. Return to Class I stock.

B. Return to Non-Class I stock.

C. Return to Vendor or PG&E.

12.1.2 The warehouse shall verify that all items being returned are correctly indicated as to disposition.

The Q.A. Receiving Inspector shall verify that the items have traceability to heat and/or to P.O. number(s) and are undamaged prior to returning to Class I stock. Disposition of items not meeting this criteria shall be to scrap or place in the Non-Class I stock. The warehouse shall correct the return tickets when needed, and turn them over to Q.A.

12.1.3 See ESD 202 for welding materials and ESD 223 for snubbers.

12.2 Installed material that is to be dismantled and returned to the warehouse, yard, or source, requires authorization of the Field Engineer. Rework must be authorized by one or more of the following DR, ASWR, RRO, Erection Drawing Revision, etc.

12.2.1 A return document (i.e. material requisition) shall be prepared by the Field Engineer or his designee to accompany the removed items. This document shall list the items and their disposition, including an adequate description, but not less than the following:

A. Return to Class I Storage -- Q.A. Receiving Inspector to verify that the items have traceability to heat and/or P.O. number(s) and are undamaged prior to returning to Class I storage.

B. Return to Non-Class I storage.

C. Return to Vendor or PG&E.

(12) Page 2

TO: H.W. KARNER, QA/QC MANAGER
FROM: T. O'NEILL, QC INSPECTOR

DATE: MAY 4, 1984

SUBJECT: DCN 1604-040, UNCONTROLLED STORAGE AREA IN UNIT 2.

THIS LETTER IS TO CLARIFY, FOR YOUR INFORMATION IN DETERMINING CORRECTIVE ACTION, EVENTS OCCURING IN CONJUNCTION WITH THIS DCN.

FOR APPROXIMATELY TWO WEEKS PRIOR TO WRITING THIS DCN, I NOTICED MATERIALS STORED IN AN UNCONTROLLED MANNER APPROXIMATELY 30 FEET WEST OF THE GATE INTO UNIT 2, SOUTH END, ON THE INSIDE OF THE FENCE. I ADVISED KEN GUY ABOUT THE SITUATION, AND HE SAID HE WOULD LOOK INTO THE MATTER. THE UNCONTROLLED MATERIALS CONSISTED OF CLASS 1 CARBON STEEL PIPE, CLASS II (CODE CLASS E) MATERIAL (CARBON STEEL PIPE), AND A BOX CONTAINING A CARBON STEEL TEE AND FLANGE (APPARENTLY CLASS E WITH NO HEAT + PO #), WITH A STAINLESS STEEL 45° FLOW-MAC SCH. 10S, 6" ELBOW (CLASS 1, SAFETY-RELATED MATERIAL PURCHASED AS SUCH WITH CMTR. THIS HAD A HEAT + PO # REQUIRED BY PO SPEC., WHICH I NEGLECTED TO RECORD.) SOME OF THESE ITEMS WERE MARKED "SCRAP", HOWEVER THE FLOW-MAC ELBOW AND OTHER ITEMS WERE NOT IDENTIFIED WITH A "SCRAP" DISPOSITION AS REQUIRED BY QAI 15.2. THE FLOW-MAC ELBOW CAUGHT MY EYE BECAUSE I HAD WITNESSED DELIVERY OF SIMILAR ITEMS TO OUR WAREHOUSE, CHECKED THE CMTR AND PURCHASE ORDER INVOICE, AND NOTICED THAT THESE ARE FAIRLY EXPENSIVE ITEMS. I COULD SEE NOTHING TO INDICATE THAT THE FLOW-MAC ELBOW STORED IN THIS AREA ..J A BOX WITH CARBON STEEL TEE, FLANGE, AND STAINLESS 1" VALVE WAS A SCRAP ITEM IN ACCORDANCE WITH QAI 15.2. I WAITED APPROXIMATELY ONE WEEK AFTER INFORMING STORAGE AREA INSPECTOR, AND DUE TO NO RESPONSE, I AFFIXED HOLD TAG 1604-040 TO A LARGE DIAMETER PIPE IN THE AREA, REFERENCED THE UNCONTROLLED STORAGE AREA, AND WROTE DCN 1604-040 FOR THE FOLLOWING DEFICIENT CONDITIONS:

1) STAINLESS STORED WITH CARBON STEEL (REF ESD 215 5.14, REV. (IMMEDIATELY PRIOR TO CURRENT REV.
2) CLASS I AND CLASS II MATERIAL STORED TOGETHER, WITHOUT SEGREGATION AND ROPED BOUNDARY IN AN IDENTIFIED STORAGE AREA, WHICH I COULD NOT ASSUME TO BE SCRAP MATERIAL.

I DID NOT FEEL IT WAS NECESSARY, NOR DO I HAVE THE TIME AS A GENERAL RULE, TO INTERVIEW PRODUCTION SUPERVISION TO DETERMINE WHO WAS AT FAULT HERE. I FEEL THAT WHEN I NOTE DEFICIENT CONDITIONS, IT IS MY JOB TO IDENTIFY SUCH CONDITIONS ON A DCN, AND LET THE QA/QC SYSTEM TAKE OVER FROM THIS POINT. I DO NOT FEEL WE NEED ~~"SOMEONE TO POINT THE FINGER AT"~~ EVERY TIME A DEFICIENT CONDITION IS NOTED. IT OFTEN APPEARS TO ME THAT OUR FEELINGS ON THIS MATTER ARE IS, "IF WE CAN'T IDENTIFY WHO IS RESPONSIBLE, WE DON'T HAVE A PROBLEM", AND THIS IS NOT RIGHT. IF THE RESPONSIBLE PARTY CANNOT BE LOCATED, THE MANAGEMENT OF THE RESPONSIBLE PARTY IS AT FAULT. IN THIS CASE, PRODUCTION MANAGEMENT IS AT FAULT, AS THIS MATERIAL HAD TO COME FROM THE FIELD UNDER PRODUCTION CONTROL.

ATTACHMENT (13)

ON MAY 1, 1984, LEAD K. FOELKER DIRECTED ME TO SEE GEORGE BIENDO IN QA, TO DISCUSS VOIDING THIS DCN. I WAS TOLD BY BIENDO THAT, "I DIDN'T PROVIDE ENOUGH INFORMATION!" BIENDO STATED THAT IF I HAD PUT THE HEAT + PO # OF THE FLOW-NAC ELBOW ON THE DCN, THAT HE "WOULD HAVE A PLACE TO START." THE PURPOSE OF THIS CONVERSATION WAS TO TRY TO GET ME TO VOID THE DCN. EVEN IF I HAD INCLUDED THE HEAT + PO #, IT WOULD BE EXTREMELY OPTIMISTIC TO SUGGEST THAT IT COULD BE TRACED BACK TO THE FIELD WAREHOUSE REQUISITION THAT GOT IT OUT OF THE WAREHOUSE. IT WAS AGAIN SUGGESTED THAT I DIDN'T PROVIDE ENOUGH INFORMATION, HOWEVER THIS WAS REBUTTED BY POINTING OUT THAT THIS DCN WAS REVIEWED BY MY LEAD, HIS SUPERVISOR, A FIELD ENGR.) HIS LEAD, ETC. IF INSUFFICIENT INFORMATION WAS PROVIDED, IT SHOULD HAVE BEEN NOTICED DURING THIS REVIEW PROCESS.

THE MOST DISTURBING ASPECT OF THIS SITUATION IS THAT THE MATERIALS IDENTIFIED IN THE DCN WERE REMOVED WITH THE HOLD TAG AFFIXED. THE ASSERTION IS THAT, ACCORDING TO L. BEGIN, "I [SIC] PUT A HOLD TAG ON A SCRAP AREA." THIS IS INACCURATE, AS SOME MATERIALS WERE MARKED SCRAP, BUT OBVIOUSLY SOME MATERIALS WERE NOT. ONE QUESTION I HAVE IS, "HOW DOES A CLASS I ELBOW BECOME SCRAP WHEN ALL INDICATIONS ARE THAT IT IS NOT DAMAGED?" I FEEL THIS ITEM SHOULD BE RETURNED TO THE WAREHOUSE. DUE TO ITS COSTLY MATERIAL CERTIFICATION FOR QUALITY CONFORMANCE. THESE ITEMS WERE REMOVED WITHIN THE LAST TWO WEEKS. I POINTED OUT TO BIENDO THAT THE DCN WAS WRITTEN ON 5/2/84, AND THE DATE OF THIS CONVERSATION (5/1/84). HAD ACTION OCCURED ON THIS MATTER WITHIN A MONTH OF ITS WRITING, POSSIBLY WHATEVER ADDITIONAL INFORMATION DEEMED NECESSARY COULD HAVE BEEN PROVIDED. BIENDO'S REPLY TO WHAT I FEEL IS AN UNACCEPTABLE AMOUNT OF TIME FOR RESPONSE TO THIS IS, "IT'S A 'LOW PRIORITY' ITEM." THE CONTENTION HERE IS THAT THE MATERIALS ARE NO LONGER THERE (ASSUMED TO BE REMOVED BY THE SCRAP CONTRACTOR) AND SINCE THERE IS NO ONE TO POINT THE FINGER AT, THERE IS NO LONGER A PROBLEM AND I SHOULD VOID MY DCN. STEVE ENGLER FELT VOIDING THE DCN "WAS IN THE BEST INTEREST OF THE QA/QC PROGRAM". I DO NOT AGREE, AND THAT IS WHY I AM WRITING THIS LETTER. IT APPEARS TO ME THAT THE QC SYSTEM IS WORKING, AS FIELD DEFICIENCIES ARE IDENTIFIED, HOWEVER QA IS CIRCUMVENTING CORRECTIVE ACTION IN THIS CASE BY TRYING TO PRESSURE ME TO VOID THE DCN. IF THIS DCN IS TO BE VOIDED, IT CAN ONLY BE VOIDED BY YOURSELF OR YOUR DESIGNEE AND ONLY WITH AN APPROPRIATE EXPLANATION. I HAVE A FUNDAMENTAL PROBLEM VOIDING DOCUMENTATION GENERATED IN THE "LINE OF DUTY," SO TO SPEAK. IF IT COULD BE SHOWN I WAS IN ERROR, I WOULD GLADLY VOID THE DCN; HOWEVER I DO NOT FEEL SUCH IS THE CASE. I AM DISCOURAGED BY THE FACT THAT QA SEEMS MORE CONCERNED WITH "CLOSING THE DCN" THAN CORRECTING A PROBLEM IDENTIFIED IN THE FIELD.

AS THIS DCN WAS GENERATED IN ACCORDANCE WITH ESD 268 AND DISPOSITIONED IN ACCORDANCE WITH THE SAME, I FEEL THE FOLLOWING STPR'S APPLY:

1) INSTRUCT CRAFT NOT TO REMOVE MATERIALS WITH AFFIXED HOLD TAGS.

2) INSTRUCT ALL APPLICABLE PARTIES AS TO CLASS I AND CLASS II MATERIAL REQUISITION, STORAGE, AND SCRAPPING IN ACCORDANCE WITH APPROVED PROCEDURES (CRAFT, QA/QC, AND ENGR)

3) INSTRUCT QA REVIEWERS AS TO APPLICABLE PROCEDURES FOR VOIDING DCN'S

IN CONCLUSION, I WOULD LIKE TO EXPRESS MY CONCERN FOR HAVING TO WRITE THIS LETTER. THE PROCEDURES ARE THERE, HOWEVER OUR PROGRAM ON SITE REGULARLY CIRCUMVENTS THESE APPROVED PROCEDURES. IF YOU WOULD LIKE TO DISCUSS THIS STATEMENT IN GREATER DETAIL, I WILL GLADLY PROVIDE MY ASSESSMENTS OF PROBLEMS AND OFFER WHAT I FEEL TO BE VIABLE SOLUTIONS TO SOME OF THESE PROBLEMS.

AS A FINAL NOTE TO THIS LETTER, I WOULD LIKE TO RELATE MY PARTING COMMENTS FROM THE MEETING WITH MR. BIENDO. I STATED THAT WHEN I SEE APPARENTLY GOOD MATERIAL BEING SCRAPPED, I FEEL I HAVE NOT ONLY A CORPORATE OBLIGATION TO REPORT THIS; BUT AS THE EYES AND EARS OF THE PUBLIC I HAVE A MORAL OBLIGATION AS WELL. MR. BIENDO REPLIED THAT HE "HAS SEEN THIS ON EVERY JOB SITE HE'S BEEN ON!" I SAID THAT DOES NOT MAKE IT RIGHT. TO THIS, MR. BIENDO REPLIED, "WE ARE CARRYING A LOT OF EXTRA PEOPLE RIGHT NOW!" I DO NOT KNOW IN WHAT CONTEXT OR TO WHOM BIENDO WAS REFERRING TO WITH THIS STATEMENT. MY QUESTION TO YOU IS, "WHERE ARE WE (THE QA/QC PROGRAM) CARRYING EXTRA WEIGHT?" IS IT THE MAN OUT IN THE FIELD, SIGNING HIS NAME TO PERMANENT, PLANT-LIFE DOCUMENTATION TO VERIFY CONSTRUCTION QUALITY, IDENTIFYING QUALITY-RELATED PROBLEMS THAT ARE VIOLATIONS OF APPROVED ESD'S; OR IS IT THE MAN SITTING BEHIND A DESK IN QA DOING HIS BEST TO ELIMINATE IDENTIFIED PROBLEMS BY TRYING TO TALK THE INSPECTOR INTO VOIDING HIS NCR?

I WILL LOOK FORWARD TO YOUR TIMELY REPLY TO THIS MATTER AND FURTHER DISCUSSION OF THIS MATTER AT YOUR EARLIEST CONVENIENCE, SHOULD YOU DESIRE IT.

VERY TRULY YOURS,

Timothy J. O'Neill

TIMOTHY J. O'NEILL
FIELD QC INSPECTOR

EXT. 2206

C.C.

QUALITY HOTLINE

(13) Page 3

5-8-84

I have arrived at these conclusions upon being asked to investigate handling of material, referenced in DCN 1604-040. Production was contacted by QC supervision and asked if they were aware ware the material had come from and if so the intended disposition and that the material was ~~[illegible]~~ not stored in compliance with our storage procedures.

Production now being informed there was a problem, then took steps to eliminate, thinking this was what was asked of them. All material mentioned in DCN 1604-040 went back to stock - scrap.

Ken Guy
Q.C. Inspector in charge of Class one storage.

Jim Trulock G. F. [illegible] or not

Ken Guy does not remember G. F. [illegible] or not stating him of this condition.

[initials]
5/21/84

ATTACHMENT (14)

H. Karner

INTEROFFICE CORRESPONDENCE

ORIGINAL

DATE MAY 11, 1984

TO HAROLD KARNER, QA/QC MANAGER

FROM GEORGE BIUNDO, QA LEVEL II REVIEWER

SUBJECT DCN #1604-040 "VOIDING" AND THE ORIGINATOR'S RESPONSE DATED MAY 4, 1984

This letter is written in response to Mr. O'Neill's comments and to clarify the review and circumstances surrounding the recommendation to void DCN 1604-040.

I first became aware of this DCN when it was directed to me with comments from Mr. F. Lyautey on April 28, 1984. Mr. Lyautey asked the task team to have QC investigate and find out who had removed the material and where it is now, where the hold tag is and the STPR needed for moving the material with the hold tag attached (see attached copy of DCN #1604-040 with comments).

On April 30, 1984, I directed a copy of the DCN to QC with a memo asking basically the same questions as outlined above. In response to my memo, Mr. Steve Engler (QC Supervisor) informed me that he had tried and could not determine who in craft removed the scrap material with the affixed hold tag. At this time, I talked with Mr. Lyautey (Mr. Engler was present) and it was decided that I confer with Mr. O'Neill the originator of the DCN.

On May 1, 1984, (AM) Mr. O'Neill and I conferred on this DCN. In this meeting I informed Mr. O'Neill that additional information was needed before I could continue processing this DCN or void it. Mr. O'Neill informed me that there was some material marked scrap. He was also concerned about carbon steel and stainless material which was Class I stored together. There was, in his opinion good reusable material (i.e., flow Mac elbows) which had heat and P.O. numbers.

The conclusion of this meeting was that if the material could not be traced, WE could void the DCN.

I then informed Mr. Lyautey of the outcome of this meeting, Mr. Lyautey asked me to get back with the originator to see if he would void the DCN.

In the late afternoon on May 1, 1984, I again conferred with the inspector in the presence of Randy King (Warehouse Leadman) and Linda Begin (DR/DCN Task Team Lead). In this meeting, we again reviewed the DCN and the circumstances surrounding its writing and what could be done. The Inspector, Mr. O'Neill, again told us of his conerns.

ATTACHMENT 15

150

ORIGINAL

When I commented on the absence of information (i.e., heat and P.O. numbers), he informed me that if he had added them to the DCN we would still be unable to trace this material back. Mr. King informed him that he was in error.

At this point, I would like to stop my narration of this meeting and directly respond to some of the comments in Mr. O'Neill's letter. Mr. O'Neill has basically reported our conversations correctly, except that he has slanted and taken comments and my intentions to such a point that I must respond.

A) Before my first conversation with Mr. O'Neill I tried to establish what could be done with the DCN and the lack of objective evidence.

B) He asserts on page 1 that he neglected to record the heat and P.O. numbers on the DCN (I had brought this to Mr. O'Neill's attention).

C) Mr. O'Neill states some items were marked "scrap", this was not mentioned in the DCN.

D) Mr. O'Neill can not back up his statements of "some items are good based upon his experience." At the time of our meetings, no objective evidence could be found to support his claims.

E) In his letter (page 1) Mr. O'Neill states,"Affixed hold tag 1604-040 to a large diameter pipe in the area." This being the case, it is easy to see how someone could have removed scrap material without a hold tag affixed. The item being held should have had the hold tag affixed, not a "large diameter pipe in the area."! (ESD-268, Paragraph 4.1.4.)

F) On page 2, Mr. O'Neill states that I told him "he didn't provide enough information." This is true. If one continues to read on, he asserts that even if he had included the heat and P.O. numbers, it would be extremely optimistic to suggest that it could be traced back. He does not quote the balance of our remarks concerning our ability to trace Class I material.

Mr. O'Neill does, in fact, only repeat in his letter the response he used to Mr. King (i.e., his reference to the other lead and field engineers who reviewed this DCN). This does not help or correct the fact that Mr. O'Neill neglected to include the additional information needed.

(15) Page 2

G) Mr. O'Neill partially quotes me as saying, "It is a low priority item." This, in fact, was only part of what I said. I had continued to explain to Mr. O'Neill that the task team has a large backlog and our priorities have been set by the CPSS and other concerned parties.

H) Mr. O'Neill takes the time to point out that Mr. Engler felt this DCN should be voided also! Attached to DCN 1604-040 in our filing system are the notes I made on the subject of this DCN and forwarded to Mr. Lyautey on May 1, 1984 (copy enclosed for your reference).

I) Mr. O'Neill goes on to hint that QA is circumventing "corrective action" and pressuring him into voiding this DCN! I take exception to this, since I am the QA person he keeps referring to. I was not pressuring him, what I did do was try to gain the information required by ESD-268 so I might conduct an investigation.

J) On page 3, Mr. O'Neill expresses his concern that we regularly circumvent approved procedures. This has not been the case for DCN 1604-040, or any other DCN/DR to my knowledge.

K) Mr. O'Neill, in the last paragraph of his letter, tries to quote me, but, in fact, quotes other parties who were involved in our meeting.

L) The references made to ESD-215, Paragraph 5.14, are not applicable. This ESD was revised on February 1, 1984 to delete Paragraph 5.14 and the DCN was written on March 2, 1984.

In conclusion, it should be perfectly obvious that had Mr. O'Neill followed existing procedures (ESD-268) the DR/DCN Task Team could have responsibly continued it's investigation of DCN 1604-040.

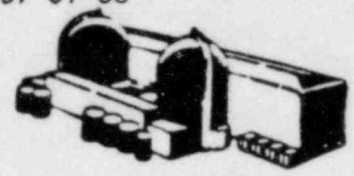
George Biundo
QA Level II Reviewer
1/6025

GB:sam

(15) Page 3

INTEROFFICE MEMORANDUM

Diablo Canyon Project



PACIFIC GAS AND ELECTRIC COMPANY
BECHTEL CONSTRUCTION, INC.

To: Memo to File

From: R. A. Hobgood

Of: G. C. Quality Control

At: DCPP Extension 3045

Date: July 17, 1984

File No.

Subject: Meeting with Concerned Caller

On July 16, 1984 at 10:00 a.m., Tim O'Neil of Pullman Power Products and myself met to discuss the ramifications of QCSR's -041, -048 and -059.

The meeting ended shortly after 11:30 a.m. Approximately 12:30 p.m., I contacted Mr. Mendonca and Mr. Polich of the NRC to notify the Resident Inspectors of the meeting and negative reactions received from Mr. O'Neil.

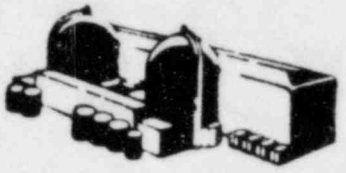
R. A. Hobgood
G. C. Quality Control Supervisor

Reply requested: No
RAH/DStetson:klh
cc: QCSR-041
QCSR-048
QCSR-059

ATTACHMENT 16

INTEROFFICE MEMORANDUM

Diablo Canyon Project



PACIFIC GAS AND ELECTRIC COMPANY
BECHTEL CONSTRUCTION, INC.

To Memo to File (Rev.1)

From R. A. Hobgood

Of G. C. Quality Control

At DCPP Extension 3045

Date July 28, 1984

File No.

Subject: Meeting with Concerned Caller; Tim O'Neill

In light of recent events (i.e. Tim O'Neill's resignation and his subsequent allegations), my Memo to File dated July 17, 1984 has been revised to include information not conveyed in the original memo. The intent of the original memo written by Dave Stetson was to document that a meeting had occurred and not necessarily to record any details of the meeting.

On July 16, 1984 at 10:00 a.m., Tim O'Neill of Pullman Power Products and myself met to discuss the ramifications of QCSR's -041, -048 and -059.

In summary, I was unable to totally satisfy Mr. O'Neill on any of the 3 concerns. He was very inflexible on each issue and basically would not accept either Pullman's explanation or justification, or my evaluation of these concerns. Because he was not satisfied I suggested that he utilize our policy to access higher management; however, he declined to respond to the suggestion. It should be noted that Mr. O'Neill took notes throughout the discussion and that I did not, and that I left the meeting with him feeling he was trying to set me up should my answers not be to his liking. Another observation was that although he made generic references to the Federal Law and ANSI standards he had very little knowledge of them. This was based on our discussion of quality organization independence (Criteria II, 10CFR50, App. B) and inspector qualification (ANSI N45.2.6).

The meeting ended shortly after 11:30 a.m. Approximately 12:30 p.m., I contacted Mr. Mendonca and Mr. Polich of the NRC to notify the Resident Inspectors of the meeting and negative reactions received from Mr. O'Neill.

R. A. Hobgood
G. C. Quality Control Supervisor

Reply requested: No
RAH/klh
cc: QCSR-041
QCSR-048
QCSR-059
0364m

ATTACHMENT (17)

NRC Allegation #0977

Allegation Description:

PGandE has poor QA in the rupture restraint repair program.

NRC Allegation Paraphrase:

The DER specialists made out reports on the defects which would get back to Pullman for correction. Pullman then would instruct the MT technicians to reshoot the bad areas to get the powder sticking so the repair people could have something to work with.

The general subject of rupture restraint program QA was previously addressed in response to Allegations H-42, H-43, and H-44 submitted in PGandE letter DCL-84-256 dated July 5, 1984. The previous allegations and responses are attached hereto.

The indications of a potential discontinuity discovered by magnetic particle (MT) examination do not remain on the examined item indefinitely. Magnetic powder particles held at discontinuities will not persist through time and handling, and re-examinations are frequently required. As a result, the submitted report (referred to in the allegation) identifies the location and type of indication found during the inspection to enable the NDE inspector to relocate the indication for the craft.

Prior to attempting to repair the identified discontinuity, the noted area is reexamined to clearly locate and identify the rejectable indications to the craft personnel. The reexamination is performed to assure that craft personnel repair the proper area. This procedure is prudent and neither indicates "poor QA" nor any other unacceptable situation.

H-42, H-43, and H-44

It is alleged that:

Also there is no commitment in the QA Program Description to 10 CFR 50 Appendix B for the other work areas which fall outside the scope of the ASME Section III QA Manual. (6/5/84 Hudson Aff. at 36.)

Although significant QA problems were identified in the Rupture Restraint Construction Program, Pullman Management claimed the QA Program as implemented basically meets [sic] the ASME code requirements. A possible reason for this could have been the fact that piping, which was based on the ASME code QA requirements, had no significant problems identified. Yet rupture restraints, which were not based on the ASME code, or 10 CFR 50 Appendix B or ANSI N45.2 QA requirement [sic], had significant QA problems. It was their absence of committment [sic] to the federal code and national standards which resulted in a deficient QA program for Rupture Restraint (sic). (6/5/84 Hudson Aff. at 39.)

Another cause not identified by PG&E was the fact that Pullman's Rupture Restraint construction program was not committed to the QA requirements of the ASME, 10 CFR 50 Appendix B or ANSI codes, the result being a totally inadequate Quality Assurance Program for the erection and inspection of Rupture Restraints. (6/5/84 Hudson Aff. at 40.)

As indicated in responses to Allegations H-2, H-7, H-8, and H-39, the QA programs at Diablo Canyon, including the pipe rupture restraint program, met the intent of Appendix B to the extent possible. This approach was reviewed and approved by the Appeal Board.

H-2

It is alleged that:

But it should be noted that neither C.S. #8833XR or C.S. #8711 made any reference to or made any commitment to comply with 10 CFRCO [sic] Appendix B, the Code of Federal Regulations concerning Quality Assurance requirements...The initial Rupture Restraint construction did not have an approved Engineering Specification to direct the work but merely a letter referencing requirements for erection and Quality Assurance. (6/5/84 Hudson Aff. at 3.)

Mr. Hudson has asserted that neither PGandE Specification 8711 nor 8833XR made any reference to or made any commitment to comply with 10 CFR 50, Appendix B.

Contrary to the implication of the allegation, there is and was no legal requirement or licensing commitment for Diablo Canyon, a plant which received its construction permit prior to the adoption of Appendix B, to meet the criteria of the Appendix. This has been acknowledged by the Appeal Board when it ruled on a Joint Intervenors Motion in this case:

> Although not expressly stated, seemingly implicit in movants' argument is the notion that the regulations required immediate compliance upon the effective date of Appendix B and that applicant's commitment was insufficient to ensure a properly constructed facility. We disagree.
>
> The Commission's predecessor, the Atomic Energy Commission, recognized in promulgating Appendix B in 1970 that the nature of the construction process for a plant already being built, such as Diablo Canyon, Unit 1, precluded the complete and immediate application of the quality assurance criteria. In the Statement of Considerations accompanying the final

> version of Appendix B, it stated that the criteria would be 'used for guidance in evaluating the adequacy of the quality assurance programs in use by holders of construction permits and operating licenses.28 [Footnote omitted].' Therefore, contrary to the movants' suggestion, the applicant was not required to conform the construction quality assurance program for Unit 1 to Appendix B upon the provision's effective date. Moreover, the applicant's commitment in the Final Safety Analysis Report (FSAR) to apply the Appendix B criteria to the extent possible for the construction of Unit 1 was completely reasonable. (ALAB-756, Slip Opinion at 21.)

Both specifications identified which work was "safety-related," and both specifications contained a quality assurance specification which was patterned after draft versions of Appendix B. Although they have a difference in format, they meet the intent of Appendix B. The Pullman program has been evaluated against these requirements and found to be acceptable.

Mr. Hudson has used a quotation from a Kellogg (Pullman) audit report which referenced a PGandE letter (which he admitted not having reviewed) to draw an erroneous conclusion that rupture restraint work was not covered by a specification. His own quotation from the audit identifies "Spec 8833XR" which is the specification for rupture restraints.

There is no programmatic QA deficiency as alleged.

H-7

It is alleged that:

...PG&E did not revise its C.S. #8711 or C.S. #8833XR to require Kellogg's construction program to comply with the QA requirements of 10CFR50, Appendix B. (6/5/84 Hudson Aff. at 10.)

It was unnecessary to revise either Specification #8711 or #8833XR which would, in turn, require a change to Kellogg's QA program. The program, in fact, met the intent of Appendix B to the extent possible. As addressed in the response to H-2, the Appeal Board has noted that PGandE was not required to comply with 10 CFR 50, Appendix B.

PGandE did review the specifications to verify the QA requirements. The quality requirements for Specifications 8711 and 8833XR are identical in substance but differ in form. While neither specification specifically references 10 CFR 50, each specifies the criteria to be met by Pullman's QA program. These criteria, in their substance, address the applicable elements of 10 CFR 50, Appendix B. The 1973 PGandE audit specifically found, "M. W. Kellogg's [Pullman's] QA Manual complies with Section 4 [Quality Requirements] of the Specification."

The NRC Staff in its review of the Pullman corporate audit program determined that, while the elements of their QA program were general, there was "a history of Quality Assurance Program Audits based on

checklists following 10 CFR 50 Appendix B criteria" (NRC Inspection Report No. 50-275/83-37 at 7-8).

H-8

It is alleged that:

PG&E and Pullman have contended that the Piping construction program which was based on ASME Section III Code requirements meet the intent of 10CFR50, App. B. But the Pipe Support and Pipe Rupture Restraint construction programs were not based on ASME SEction [sic] III, and were not required by Contract Spec to meet 10CFR50, App. B. The result was that pipe support and rupture restraint QA programs were not based on nor did they comply with the QA requirements of 10CFR50, Appendix B.

The overall Pullman QA program was based on ASME Section III quality assurance requirements, NA 4000. This is evident since ASME had awarded Pullman both an NA and an NPT stamp which require compliance with ASME Section III requirements. The ASME NA 4000 quality assurance program is virtually identical to Appendix B.

In 1973, Pullman developed and issued a quality assurance manual specifically for pipe supports and rupture restraints. This program was developed based on the quality assurance requirements contained in specifications 8711 and 8833XR. The rupture restraint QA manual was approved by PGandE as meeting the requirements in the specifications. As noted in the PGandE QA Audit 73-15, the overall Pullman QA manual complies with the specifications' QA requirements. The quality assurance requirements contained in Specifications 8711 and 8833XR, though different in format, meet the intent of Appendix B.

The rupture restraint QA manual was in compliance with both the overall Pullman QA program, which is based on ASME NA 4000, and is in compliance with the quality requirements of the specifications.

H-39

It is alleged that:

As a result of the 1977 Nuclear Service Corp. audit, PG&E's QA Department would perform Audit #80422, issued 6-13-78. PG&E's conclusion was that the QA Program implemented by Pullman essentially fulfilled contract requirements and meets requirements of the ASME Boiler and Pressure Vessel Code, 1971 edition. PG&E stated that the 1971 code was consistent with the requirements of 10CFR50 Appendix B. What PG&E and Pullman failed to recognize was that only Pullman's Piping Construction program was based on the ASME Code QA requirements. The Pipe Support and Pipe Rupture Restraint QA programs were not based on a national code or standard and there was no commitment to 10CFR50, Appendix B for these programs. (6/5/84 Hudson Aff. at 34.)

The specifications for pipe supports and rupture restraints contained quality assurance requirements which meet the intent of Appendix B. Pullman's QA program was evaluated to these requirements and was found acceptable. This issue was previously addressed in PGandE's response to Mr. Hudson's allegations H-2, H-7, and H-8. As stated therein, 10 CFR 50, Appendix B, was not a licensing requirement for Diablo Canyon. As the Appeal Board has noted in this proceeding that it was adequate and appropriate to address the intent of Appendix B "to the extent possible," and as it was deemed that the Diablo program did meet the intent, there was no need to commit to Appendix B or revise any program accordingly.

NRC Allegation #0981

Allegation Description:

Improper fit-up of large base plate beam (on hanger) causing an improper weld which was bought off.

NRC Allegation Paraphrase:

No specifics given.

Since the specific instance of alleged improper fit-up of a large baseplate beam has not been given in the allegation, PGandE can not provide a specific answer. Fit-up is a QC inspection point and no data has been presented by the alleger to indicate that there was a failure to inspect structural welding fit-up activities.

If the alleger's concern is that improper welds are bought off without any review, he is incorrect. In some instances, welds may inadvertently be made that do not meet specifications. Such welds are identified by QC. If the weld is not clearly unacceptable, a weld may be identified and referred to Engineering for an evaluation as to its potential acceptability, despite its apparent noncompliance with the specification. If, and only if, the weld is found acceptable as-is by Engineering, would such a weld be accepted ("bought off").

NRC Allegation #0994

Allegation Description:

Atkinson 78, Inspector hold tag cleared from work (turbine bdg.-119 level) under questionable conditions, for work on bars to support the decking-welds not to code.

NRC Allegation Paraphrase:

As stated - also the weld did not fit the stitch spacing and length specification, much less have an acceptable quality for AWS configuration.

This subject was previously addressed in response to NRC Allegation #421 submitted in PGandE letter DCL-84-195 dated May 29, 1984. The previous allegation and response are attached hereto. As previously stated, the hold tags were issued on welds which were in process. The welds were repaired in accordance with the proper procedures and were subsequently accepted. The hold tags were then cleared in accordance with the appropriate procedures.

NRC Allegation #421

It is alleged that:

8. I saw that a large number of welds on the underside of the floor at the 119 foot level had been accepted, although the work did not meet the requirements on the drawings. I was sent to inspect one group of welds because crews were shorthanded and the scaffolds couldn't be removed until the work was bought(sic). These welds were at different stitch lengths and spacing than specified on the drawings. The workmanship was so poor that in the trade they would be called "dog meat". They were consistently in violation of the requirements but had been consistently accepted. I compared these welds with the other welds in the same area I had been assigned and that were similarly bad. I started looking around to see if there were any acceptable welds. I ended up tagging the whole area. (Hedrick Aff. at 4.)

200. The welds in question were located in the G column area at the 119-foot level of the turbine building. The fact that the welds had not been performed properly was first identified by Mr. Art Carlson, a PGandE inspector who, in accordance with the appropriate procedures, directed Mr. Hedrick to inspect and reject ("red tag") the welds. Mr. Carlson's discovery of the welds was noted by Mr. Hedrick in Exhibit 8 to his affidavit.

201. Subsequent investigation showed that the welds were still "in process" and, although certain hold points had been approved, the welds had not been accepted by GFACo QC. It is further possible that, as these welds were discovered at the start of the swing shift, the day shift QC personnel had not yet even inspected the condition of the welds. In any case, the statement that the welds "had been consistently accepted" is

patently false. Further, the statement that "the whole area" contained only faulty welds is, at best, misleading. The total number of faulty welds involved in the incident described was less than 10. These welds were in process and were repaired in accordance with the proper procedures and subsequently accepted.

202. This incident is another example of the QA system working as it should. Both GFACo inspectors and PG&E field engineers were performing their inspection activities properly and took the appropriate actions when any deficient condition was discovered. The necessary rework was performed in an appropriate and timely manner.

203. This item requires no further corrective action.

NRC Allegation #0995

Allegation Description:

Atkinson 78 - Inspection work in northwest corner roof area of turbine building was performed by questionable inspector.

NRC Allegation Paraphrase:

Name of inspector is stated.

Without the particular inspector's name, his specific qualifications can not be verified. However, all inspectors with GFACo were qualified through training/certification to perform their assigned duties in accordance with GFACo Quality Control Procedure QCP-13, "Personnel Training." In addition to the GFACo inspectors performing inspections of GFACo production crews' work, PGandE inspectors were assigned to each work area and they performed inspections to provide added assurance that GFACo personnel were performing all work in accordance with the drawings, specifications, and the established Quality Assurance Program. Also, periodic audits of GFACo and PGandE General Construction inspectors were performed by the PGandE QC Department to ensure that all parties were conforming to the Quality Assurance programs established for both the contractor and PGandE. This multi-level inspection and acceptance process would have identified any improper inspection activities and focused attention on any "questionable" inspectors.

NRC Allegation #1008

Allegation Description:

Control documents were not audited -- documents were out of date.

NRC Allegation Paraphrase:

PGandE claimed they audited all control documents in January 1983. The control documents that the alleger had at that time were out of date. The audit might have been done at the home office, but not at the site.

PGandE has reviewed all its prior responses and cannot find where it made the claim that all Diablo Canyon controlled documents were audited in January 1983, as is alleged. The PGandE Quality Assurance Department generally audits controlled documents by document type and on a sample basis. All document types, in fact the entire quality program, are audited at least once every two years as is required by the quality program. All controlled documents, collectively, are not audited at one time, as is alleged.

Previous allegations concerning controlled documents pertained specifically to control of procedures at Onsite Project Engineering Group (OPEG). This issue was addressed in PGandE letter DCL-84-131 dated April 4, 1984, Enclosure 2, pages 19-26, and again in PGandE letter DCL-84-239 dated June 26, 1984 in response to JIR-5 and JIR-6. The previous allegations and responses are attached hereto.

The alleger is apparently aware of the requirement for control of procedures. The alleger is also apparently aware that he has not complied with those requirements as is his responsibility defined by the PGandE quality program. Under Engineering Manual Procedure 5.1 Section 4.6, "[h]olders of controlled copies of the Manual shall keep them up to date." (Attachment A).

PACIFIC GAS AND ELECTRIC COMPANY
ENGINEERING DEPARTMENT

PROCEDURE NO. 5.1
PAGE 1 OF 5
REVISION NO. 4
Effective
Date: 3/15/82

ENGINEERING DEPARTMENT MANUAL CONTROL

APPROVED: D.A. Brand 3/15/82
VICE PRESIDENT, ENGINEERING DATE

1.0 Purpose

This Procedure establishes how the Engineering Department will develop and control the procedures of the Engineering Manual.

2.0 Scope

This Procedure is mandatory for all Engineering Department Manual procedures.

3.0 Responsibility

3.1 The Vice President-Engineering reviews and approves the Engineering Manual Procedures and their revisions. 4

3.2 The Chief, Engineering Quality Control (EQC), is responsible for coordinating, publishing, maintaining, and controlling the Engineering Manual.

3.3 The Chiefs are responsible for reviewing and commenting on proposed procedures and revisions. They shall assign personnel to serve on the Engineering Procedures Committe and shall inform EQC of the assignment.

4.0 Procedure

4.1 Unless otherwise noted herein, Procedures and their revisions shall be developed through an Engineering Procedures Committee composed of at least one member from each Engineering department. The chairman of the committee shall be the Quality Program Supervisor, EQC.

4.6 Engineering Quality Control shall distribute the approved procedures and revisions. A controlled sitribution list shall be maintained by EQC that contains the name of the individual and the control number of the copy of the Manual issued. A copy of the issued, approved procedure shall be accompanied by an acknowledgement card. Holders of controlled copies of the Manual shall keep them up to date. Upon receipt of approved procedures, revisions, or a complete new Manual, the Manual holder shall dispose of the obsolete page(s) or Manual and sign and return the acknowledgement card. Obsolete pages or Manuals may be kept for reference if each page is marked in a manner which clearly indicates that it is superseded.

4.7 Temporary Revisions

4.7.1 Temporary revisions are intended to be issued only when there is an urgency associated with the revision and a trial period may be desirable. These revisions may be issued for any valid reason including:

a) Nuclear Regulatory Commission audits, bulletins, or citations
b) Nonconformance Reports
c) Quality Assurance Department's Open Item Reports
d) Discrepancy Reports
e) PGandE policy and/or management directives.

4.7.2 Requests for temporary procedure revisions may be initiated by any Engineering Department member by completing a "Temporary Procedure Revision" sheet (Attachment B), obtaining his Chief's approval, and submitting the proposed revision, to the Chief, Engineering Quality Control.

4.7.3 EQC shall review the proposed revision to assure that it is in accordance with:

a) Company policy for quality

4. Procedure Control

CRITERION VI

ITEM 1:

Observation: Engineers were using out-of-date procedures for performing their work. (Draft Report pp. 10-12; S/B)

ITEM 2:

Observation: Inter-office memorandums were issued in lieu of procedures that bypassed review and approval process. (Draft Report pp. 12-13; S/B)

ITEM 3:

Observation: Site quality engineer and support group leader maintained outdated listings of the latest work procedure. (Draft Report p. 15; S/B)

ITEM 4:

Observation: Design personnel was performing calculations without having adequately controlled procedures for extended periods of time (Draft Report pp. 14-15; S/B)

CRITERION XVI

ITEM 1:

Observation: Site design organization management was insensitive to staff concerns and did not initiate timely corrective actions. (Draft Report pp. 27-29; S/B)

Summary Response:

The Project acknowledges that out-of-date procedures were in some controlled manuals at OPEG. We have evaluated the effect of each missing or out-of-date

document on a case-by-case basis. The evaluation has concluded there was no effect on the quality or technical adequacy of design work.

Apparently the inspector believes that each OPEG engineer required his own controlled documents. Project documentation shows that, depending on the size of the group, there were never less than three and as many as eleven sets of controlled piping procedures assigned to the OPEG Stress Group. This constituted a sufficient number of controlled procedures for use by OPEG engineers.

The identified interoffice memoranda (IOM) were not used in lieu of work procedures. One IOM was issued to provide guidance for assurance of proper interpretation of AWS codes. The other was an engineering request for revision of a contractor's procedure. Neither document formed the basis for changes in design work procedures.

The inspector's observations have no implications on low power or full power operations.

Detailed Response:

Adequate document control procedures existed on site at all times while design was conducted. This concern was covered in our submittal to the NRC dated February 7, 1984:

> The DCP QA Program requires formal control of implementing procedures. Detailed requirements are contained in Engineering Manual Procedure 5.2. Implementing procedures are required to be logged into a control system by title, date of approval and revision number. All holders of implementing procedures are required to formally acknowledge receipt of revisions by returning a signed acknowledgement.
>
> Special implementing procedures, instructions and criteria for the small bore piping design verification effort were authored by the Project Team Piping Group, and the control of their distribution was managed by the Project Administration Group using a system of signed, returned receipts.
>
> A master document distribution matrix was prepared to establish which manual holders receive specific documents in accordance with the requirements of their job assignment. A specific set of defined documents is assigned to a pipe support engineer; a different set of documents is assigned to a pipe stress engineer, and so forth.
>
> a) Out-of-date Procedures
>
> The staff identified three instances of out-of-date procedures contained within the controlled procedure manuals maintained in the OPEG. As a result, a discrepancy

report (DR 83-47-S) was issued by Project Engineering. This DR addresses corrective action, impact on final design and actions to prevent reoccurrence.

A 100% review of all control procedures, instructions and criteria assigned to OPEG personnel was completed by December 15, 1983. Sixty-three (63) manuals containing 133 criteria documents, 412 procedures and 451 instructions were reviewed. The results showed that 90% of the documents assigned to the manuals were correctly in place. The review results have been evaluated to determine the possible impact on the small bore reverification work. Most of the instances found involved documents missing from certain controlled manuals, in which case the appropriate requirements are available to the engineer through other controlled manuals in the work area. Each instance of an outdated procedure or instruction was evaluated and determined to not impact the completed design work. The documents found to be outdated were characteristically documents that the assigned manual holder would not be using in performing his specific assignments.

All 63 controlled manuals have been brought up to date. They now contain only current copies of those documents specified by the master document distribution matrix.

The Staff also expressed the concern that since Piping Procedure Manual B-075 was presumably the only controlled manual assigned to the OPEG Stress Group, there was a possibility that Stress Group engineers had been without access to up-to-date procedures for an extended period of time. However, our investigation has shown that other controlled copies of the manual had been assigned and available to members of the Stress Group since the inception of the OPEG group. For example, the October 14, 1982 Distribution List for Piping Group Procedures, Instructions and Criteria for Diablo Piping Design shows that 11 members of the Stress group were assigned controlled manuals. Although the number of manuals assigned to the Stress Group has varied, at no time were

there less than three controlled manuals assigned to this Group.

On a broader level, the Staff concern relates to Allegation 84 in SSER 21, dealing with lack of management responsiveness to an engineer's request for a copy of controlled design procedures. The allegation was discussed and resolved in SSER 21, with the Staff concluding that the "spirit of the allegation was substantiated" and that "management must improve its sensitivity in addressing safety concerns and improve communication with workers." In late 1982, there was an acknowledged shortage of copies of the manual, such that all engineers did not have individual copies. However, sufficient numbers of the controlled documents were available as discussed above and the engineers were able, and required, to use them. Additional copies have subsequently been made available, consistent with the goal of avoiding unnecessary complications in document control due to the distribution of more copies than necessary to accomplish the work.

Because the controlled design documents were, in fact, available to the alleging engineer, there was no violation of procedures or adverse affect on the small bore piping analyzed. Nevertheless, the Project has perceived the desirability of improvement in this area, and has taken several actions toward this end:

1. Document Control Procedures and practices are being reviewed with onsite Engineering personnel. They have been notified of the importance of complying with document control procedures and of their responsibility to update manuals and return acknowledgement forms.

2. Procedure P-1 was revised in Rev. 4 dated January 30, 1984 to require a monthly supervisory review of controlled manuals to assure that procedures, instructions and criteria are kept current.

3. For future revisions to design procedures, the supervisor will discuss the content of the revision with engineers under his supervision to be sure everyone is aware of changes and how they are to be implemented. Alternatively, procedure changes which are now routed to all manual holders will be formally routed to all engineers and will require an acknowledgment signature.

Also as a part of the resolution of DR 83-047-S, the possible effect of outdated design criteria documents on the final design has been reviewed. There were no instances found of out-of-date criteria in the manuals. All individuals, including those missing criteria documents, had access to current controlled copies of applicable criteria in order to correctly perform their design work.

As a separate effort, a Project QA review of configuration control of other manuals at OPEG (i.e., Engineering Manual, PEIs) has been completed. No deficiences were identified in this review.

Also, as addressed in PGandE Letter No. DCL-84-046 of February 7, 1984, to the NRC:

"The staff also noted an instance of out of date procedure listings. An occurrence was observed where a controlled manual Table of Contents dated October 28, 1983 was in the possession of the Onsite Project Engineer, while other supervisors had the previous version dated September 15, 1983.

This specific instance, ironically, resulted from management's efforts to improve the methods for distribution of revisions to controlled manuals. Distribution of the October 28, 1983 revision was held by the Onsite Project

Engineer upon receipt for two weeks while these improvements were being formulated. The revised practices have since been incorporated into Piping Procedure P-1."

The revisions involved in the October 28 Table of Contents were reviewed for content and impact. All revisions consisted of either administrative changes or minor clari- fications. Failure to apply them to design work for the two-week period had no adverse impact on the designs involved.

"The Project has in place formal procedures for requesting and approving design changes. These procedures do not permit design changes to be made on the basis of an inter-office memorandum (IOM). The NRC's concern apparently relates to two identified IOMs issued by Project Engineering. As discussed below, however, neither of the two memoranda constituted design changes.

The first IOM involved the use of the welding code (AWS) for calculation of skewed welds. The Pipe Support Group Supervisor issued an IOM dated March 21, 1983, for the purpose of providing guidance in modeling skewed welds in conformance with the code. The IOM did not change any design documents, nor did it violate either good engineering precepts or approved QA procedures or requirements.

The second IOM of concern to the Staff was an IOM issued by Engineering on October 20, 1983, to General Construction, approving a request to revise a contractor's installation procedure. The change involved installation tolerances in the contractor's procedures which had been previously approved by Project Engineering in accordance with Project procedures for approval of contractor documents. General

> Construction and the contractor formally executed the change. Neither the request nor the IOM approving the change resulted in a change in the Project's approved design drawings or specifications, thus, the issuance of a Design Change Notice was inapplicable. Project actions, including the IOM from Engineering approving the change in the contractor's procedures, were consistent with Project procedures for review, approval, and amendment of contractor documents."

To assure that procedure manuals are maintained in the current configuration, supervisors have been directed to review the manuals being held by their subordinates on a regular basis. In addition, manual configuration control is being emphasized in QA audit and surveillance activities.

JIR-5

It is alleged that:

5. On page nineteen (19) PG&E states, "The Project acknowledges that out-of-date procedures were in some controlled manuals at OPEG."

This statement is misleading, because it is incomplete. What about uncontrolled copies of the manuals? While I was in OPEG, the group leaders at times copied various sections of controlled manuals and gave them to us to use. At times, we discovered that a document existed which was relevant to the work which we were performing and we made our own copy. Have the uncontrolled documents have been [sic] removed from use? I know that in light of the heavy production drive which we were required to live up to, that we needed our own controlled documents in order to avoid spending unnecessary time searching out a document in someone elses [sic] possession. I would like to quote a line from 10 CFR 50 Appendix B, II. QUALITY ASSURANCE PROGRAM. "Activities affecting quality shall be accomplished under a [sic] suitably controlled conditions." I believe that the practices above are not in compliance with 10 CFR 50 Appendix B, II. (6/1/84 Stokes Aff. at 4-5.)

Mr. Stokes contends that the response to Mr. Yin's observation is misleading because it does not address uncontrolled copies of manuals. However, Mr. Yin's observation was that "Engineers were using out-of-date procedures for performing their work." (Draft Report pp. 10-12 S/B.) At the time of his inspection, Mr. Yin did not have any observations with respect to uncontrolled copies of manuals. Yet, Mr. Stokes claims PGandE's response is misleading because PGandE responded fully to the observations of Mr. Yin and did not address Mr. Stokes' allegations in that response.

More importantly, although Mr. Stokes poses the question as to the use of uncontrolled manuals, his examples do not involve problems

with manuals. While he may be technically correct in his assessment that a copy of a section of a controlled manual may create an uncontrolled document, it does not follow that there was anything improper about the practice. The difficulty is that Mr. Stokes misleads the reader by implying that procedures changed so often that making a copy of a procedure would inevitably lead the user to rely upon an out-of-date procedure in the event he used the copy a second time. This observation is misleading and totally without factual basis.

It has been acknowledged that out-of-date procedures were in the possession of some OPEG pipe support engineers. In some cases this included uncontrolled copies of controlled procedures. However, pipe support engineers were specifically directed to rely only on current, controlled copies of procedures in completing their work. Sufficient copies of controlled procedures were available for reference use in the OPEG work areas. Mr. Stokes' intimation that each engineer must continually refer to a procedure manual in the course of his work ignores the fact that, because of the basically repetitive nature of this work, engineers soon gain a working knowledge of procedures affecting their work and consequently need not refer to the procedures frequently. The number of controlled procedures made available to OPEG engineers afforded convenient reference access, while at the same time avoiding unnecessary complications in document control due to distribution of more copies than necessary to

accomplish the work. Contrary to Mr. Stokes' allegation, this practice does not violate any requirements of 10 CFR 50, Appendix B, and is not inconsistent with industry practice.

JIR-6

It is alleged that:

6. On page twenty (20) PG&E's statements raise serious questions. "Apparently the inspector believes that each OPEG engineer required his own controlled documents. Project documentation shows that, depending on the size of the group, there were never less than three and as many as eleven sets of controlled piping procedures assigned to the OPEG Stress Group. This constituted a sufficient number of controlled procedures for use by OPEG engineers."

From personal experience and discussion with OPEG engineers, I can testify that PG&E's conclusion is absurd. Under the conditions on-site--20 to 30 engineers trying to use three sets under a very demanding schedule. As a result, they made do without control documents. They used uncontrolled documents instead.

PG&E's assertion violates industry accepted engineering procedures. It is industry practice to assign each engineer his own controlled documents. At Bechtel's Gaithersburg office, I was given controlled documents within two weeks of my beginning work on the DAVIS-BESSEE [sic] project. When I went to work for Nuclear Services Corporation on the Zimmer project, we all received sets of control documents within two weeks of starting. I believe this is done for two reasons--1) to be in compliance with 10 CFR 50 Appendix B Criterion VI. DOCUMENT CONTROL; and 2) because production is very important to meet scheduled completion dates and time wasted looking for information should be avoided by providing each engineer with his own project documents. (6/1/84 Stokes Aff. at 5-6.)

Mr. Stokes asserts that from "personal experience" the number of controlled documents assigned to the OPEG stress group was insufficient. Mr. Stokes was never assigned to the OPEG stress group and his specific "personal experience" in the matter is therefore

vicarious, at best. In any case, this allegation is based on Mr. Stokes' basic misconception that each engineer must continuously refer to the procedure documents during the course of development of each calculation he originates or checks in order to remember how to correctly do the work. In fact, the calculational process involved in pipe stress and pipe support design is largely repetitive from one calculation to the next. It frequently involves iterative steps which are essentially identical. As a practical matter, an engineer gains a working familiarity with applicable procedures and criteria within a short period of time and will subsequently not need to refer to them on a frequent basis. The perception that all stre s engineers must spend most of their time huddled around a few procedure manuals is, in Mr. Stokes' vernacular, "absurd."

The number of controlled procedures made available to OPEG engineers afforded convenient reference access while at the same time avoiding unnecessary complications in document control due to distribution of more copies than necessary to accomplish the work. Contrary to Mr. Stokes' allegation, this practice does not violate any requirements of 10 CFR 50, Appendix B, and is consistent with industry practice.

NRC Allegation #1026

Allegation Description:

Pullman inspectors buying off over- or under-sized welds.

NRC Allegation Paraphrase:

Inspectors were buying off oversized welds. An audit of DCN's and DR's would show examples of bought off substandard work. QC engineer walkdowns were to pick up the stuff that was missed because inspectors felt "Fill in the blanks; as long as the paperwork looks good, let's go with it."

Oversize welds are generally acceptable provided the oversize weld does not interfere with mating parts or cause unacceptable dimensional/alignment distortion.

It cannot be determined from the allegation whether the welds in question are on hangers, rupture restraints, structural steel, or elsewhere. It must be understood that criteria for the acceptability of over- and undersized welds found in procedures, such as ESD 223 and ESD 243, have been revised numerous times over the years. Thus, a weld that was acceptable in 1977 might be considered rejectable if the same weld was made in 1983. This does not mean that the earlier weld is unsafe, just that the earlier weld does not satisfy the newer acceptance criteria.

Pullman has never condoned an attitude by inspectors such as is set forth in the allegation. Nor has Pullman been able to identify any instance where any inspector merely filled in the blanks and accepted welds without having performed the appropriate inspection. For example, the walkdown performed as

a result of PGandE Nonconformance Reports DC2-80-RM-002 and DC1-79-RM-003 was to resolve the conditions identified on these NCRs which included potential welding deficiencies and not to "pick up stuff that was missed," as alleged.

When conditions are identified that do not meet current procedural requirements, they are documented on DCNs and DRs. A review of these documents would, indeed, show examples of work identified as unacceptable since the function of DCNs and DRs is to identify unacceptable conditions and track their disposition. The disposition of these documents results in bringing the work back into conformance with the appropriate requirements. The recording of unacceptable conditions and performing walkdowns are parts of a properly functioning QA system and not examples of a program to allow acceptance of substandard work, as alleged.

NRC Allegation #1055

Allegation Description:

Anchor bolt drilled holes were not checked in accordance with ESD 223.

NRC Allegation Paraphrase:

[As stated in description]

There were isolated cases where anchor bolt holes were not inspected before insertion of the bolt, as is required by ESD 223. When this occurred, the discrepancy was obvious during the Pullman QC and QA in-process review of the process sheets and resulted in either reworking to perform the required inspection or initiation of a deficient condition notice. The discrepancy was then resolved before the work could be accepted.

If the alleger's concern is that, as a general practice, anchor bolt holes were not checked in accordance with ESD 223, then he is in error. Review of the process sheets, deficient condition notices, and discrepancy reports indicate that no such generic problem occurred.

NRC Allegation #1061

Allegation Description:

Foley 81/82 - Inspector told not to red tag a loose beam clamp after it had been accepted by Foley QA and PGandE because he could be out of a job if he did.

NRC Allegation Paraphrase:

Two employees feared they would lose their jobs if they wrote up a deficient condition notice. They were concerned with a beam clamp that had been moved after the ZRC paint was applied. They were concerned because Foley, PGandE, and the NRC had bought off the work.

After investigating this matter, Foley is unaware of any inspector who was threatened with the loss of his job for red tagging a loose beam clamp after it had been accepted. In fact, Foley has always insisted that inspectors document deficient conditions wherever they are noted and has threatened inspectors with loss of employment if they should fail to do so.

It also appears that the alleger is not personally familiar with the substantive facts of the allegation as Foley has never used Deficient Condition Notices to document discrepancies.

Finally, the allegation lacks sufficient information to determine whether the moving of the beam clamp after painting was a problem. It could well have been a situation where additional modifications were required after the initial installation or modification was completed. In such a case, moving of the clamp may have been for a proper reason; but, without further detail, a more specific response is not possible.

NRC Allegation #1117

Allegation Description:

PGandE has attitude that if it can be installed, do it even if it might be wrong. For example, half inch fillet weld on schedule 10 pipe on 3 sides on a lug attachment.

Contrary to the allegation, PGandE's attitude is not to install an item if it might be wrong. In fact, PGandE has procedures in-place to allow the field engineers to question design engineering concerning the installation of any piece of hardware. When the PTGC engineer or inspector believes that the design provided by Engineering for the installation of a particular piece of hardware is not appropriate for the condition in the field, the engineer or inspector can generate a Diablo Problem (DP) sheet to be sent to Engineering for review of the field engineer's concern. Upon receipt of the DP, Engineering reviews the concern of the field engineer and either revises the design or gives the field engineer an explanation as to why the design is adequate and/or necessary in its current form. The DP procedure assures that engineers in the field will use their judgment and experience when installing hardware to see that only properly designed hardware is installed.

The allegation identifies the welding of 1/2-inch fillet welds on schedule 10 pipe on 3 sides on a lug attachment as an example of PGandE's supposed attitude of installing an item even if it might be wrong. This example is similar to a concern raised during the NRC conducted tour of April 11, 1984. As discussed in PGandE letter DCL-84-170 dated May 2, 1984, a copy of the applicable portion of which is attached, the work was performed according to

design requirements and when questions arose as to the adequacy of the design, investigations showed that the design and installation met all design requirements.

ITEM No. 6 Weld Size, Distortion and Residual Stress on Pipe Support 50-26V, Unit 2

It is alleged that a pipe support has lugs with oversized welds, excessive distortion and residual stress in the pipe, and the eccentric loads on the lugs were not accounted for.

RESPONSE:

These lugs were originally installed by the piping spool fabricator using 7/16" partial penetration welds with fillet caps of unspecified size. Pullman Power Products Discrepancy Report-8109 was issued on 02-15-84 to document the unspecified fillet weld size. Design Change Notice DC2-EP-8188, which was issued on 03-09-84, specified 1/2" fillet welds for the lugs. The required additional welding had been completed and accepted by Pullman Power Products Quality Control. In addition, a certified welding inspector had determined that these welds meet the design requirements of 1/2" fillet welds.

The procedure requires that the eccentric loading of shear lugs is accounted for in the local stress analysis of the pipe. The alleger apparently believes that the loads are analytically applied at the surface of the pipe. This is not the case. Instead, the point of loading in this particular support is taken at a distance from the pipe wall equal to the height of the lug. This

properly accounts for the eccentric loading of the lugs. In addition, as required by design criteria, only two of the four lugs are considered to carry the piping load.

Residual stresses due to welding and other fabrication processes occur in virtually all piping and other hot formed steel components. The deformation of thin-walled stainless steel piping due to welding is a phenomenon that is well recognized by the ASME codes and the industry.

The distortion present in the pipe at support 50-26V, and support 97-3R to a lesser extent (Ref. Item No. 4), is typical of this type of welding on thin wall (Sch. 10S) stainless steel pipe.

The development of the rules for piping analysis by the ASME and ANSI B31.1 codes considered the presence of residual stresses. These rules rely on data obtained from tests of actual fabricated piping components, and hence residual stresses were factored into the tests. Residual stresses are local and secondary, and therefore of a self-limiting nature.

In summary, the welds were of the proper size, eccentric loading was considered in design and analysis, and pipe distortion and residual stresses are acceptable. Therefore, this allegation is not valid.

NRC Allegations #1199 and 1456

Allegation #1199 Description:

PGandE made a false statement when they stated that 304H has not been used at Diablo, a letter dated 2/10/84 infers that 304H was used for piping.

NRC Allegation #1199 Paraphrase:

The February 10, 1984 letter from Myron Leppke inferred that higher carbon grade "H" materials were used at Diablo Canyon. If so, PGandE's assertion in answer #2 that "(g)rades such as 304 H have not been used for piping" is false.

Allegation #1456 Description:

PGandE's assertion that higher carbon grade such as 304H have not been used in piping is false.

These allegations are incorrect. The responses to allegations JI-192, JI-193, and JI-194 in Attachment K to PGandE Response to Joint Intervenors' Motion to Reopen on CQA, dated March 19, 1984, are correct as written (Attachment A).

PGandE has reviewed its files and has found no letter dated February 10, 1984, which discusses the carbon content requirement for stainless steel used for piping. The only letter from M. Leppke which does discuss the carbon content requirement for stainless steel is dated January 25, 1984 (Attachment B). Contrary to the allegation, the January 25, 1984 letter does not use the term 304H and does not imply that 304H was used for piping at Diablo Canyon (Units 1 and 2). As explained in the letter, a requirement of carbon content of 0.04% was established to provide a higher stress allowable. It did not authorize use of stainless steel with carbon content in excess of 0.08%.

As stated in PGandE's previous response, 304H has not been used for piping. The piping specifications which were used at Diablo Canyon, Drawing No. 049021 (Attachment C) specify the material to be used. Piping Specifications "S1," "S2," "S3," "S5," "S6," and "S8" (Attachments D, E, F, G, H, and I) all specify the material to be used as 304 or 316 -- not 304H, as alleged. There is no concern that the authorization to use material of a greater than 0.04% carbon content would lead to the use of 304H because, by ASTM specification A312, the content of 304 and 316 material is limited to 0.08% and does not reach the upper carbon limit of 0.10% of 304H. (Attachment J, Table 1).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	
PACIFIC GAS AND ELECTRIC COMPANY	Docket Nos. 50-275 50-323
(Diablo Canyon Nuclear Power Plant, Units 1 and 2)	(Construction Quality Assurance)

AFFIDAVIT OF M. TRESLER, F.C. BREISMEISTER, R.D. KERR AND C.H. NICHOLS

STATE OF CALIFORNIA)
) ss.
COUNTY OF)
SAN LUIS OBISPO)

The above, being duly sworn, depose and say:

I, M.R. Tresler, am Assistant to the Unit 1 Project Engineer on the Diablo Canyon Project. I am an employee of Pacific Gas and Electric Company.

I, F.C. Breismeister, am Manager of the Research and Engineering/ Materials and Quality Services Department, San Francisco Office, for the Bechtel Group.

I, R.D. Kerr, am Senior Welding Engineer for the Pacific Gas and Electric Company.

I, C.H. Nichols, am Engineering Group Leader in the Unit 1 piping group on the Diablo Canyon Project. I am an employee of the Bechtel Power Corp.

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JI #192, Supplemental Motion at 11.

It is alleged that:

PGandE may have received large quantities of stainless steel that are out of compliance with the relevent codes, due to a December 9, 1983 purchase order specifying that materials received for use at Diablo must have a minimum carbon content of .04. (citing 1/23/84, Anon. Aff. at 7-8 and related Exhibit 8.) This specification should have limited carbor content to a maximum of .04. (citing 1/23/84, Anon. Aff. at 7.) The vendor had an incentive to take advantage of this error, because high-carbon stainless steel is cheaper to manufacture than low-carbon stainless. (citing 1/23/84, Anon. Aff. at 8 and transcript of 1/5/84 meeting with NRC inspectors at 48-51.)

1. The allegation is false. All of the stainless steel material is in compliance with code and specification requirements. It is true that certain stainlesss steel piping was purchased with a 0.04% minimum carbon content, but this material also had a 0.08% maximum carbon content requirement. A review of Pullman procurement records issued in early December 1983, the time frame of interest, has identified three purchase orders for A403 Grade 304 or A182 Grade F304 stainless steel pipe fittings. These purchase orders require that the material not only meet the chemical analysis requirements for Type 304 but also have a minimum carbon content of 0.04%. These requirements are stated in PGandE Piping Specification 8711 and are properly implemented by the Pullman purchase orders.

2. The requirement to control minimum carbon content of these stainless materials was included in PGandE Specification 8711 to implement the requirements of the Nuclear Steam System Supplier. These are included in Westinghouse Engineering Specification 677129, Revision 1, dated June 4, 1969.

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3. It is obvious that placing additional procurement requirements, more restrictive then industry standards, will not reduce costs.

JI #193, Supplement Motion at 11.

It is alleged that:

> The safety significance of using high-carbon stainless steel in welded applications is that it increases the likelihood that carbide precipitation will cause the welded joint to lose its corrosion resistance and not last as long as the requirements referenced in the Final Safety Analysis Report. (citing 1/23/84, Anon. Aff. at 8) The witness who raised this issue stated that this problem had occurred at the San Onofre plant, and all of the high-carbon stainless steel had to be replaced after only a few years of service because of extensive corrosion. (citing transcript of 1/5/84, meeting with NRC inspectors at 52.)

1. The allegation is incorrect in referring to the steels used as high carbon (H) stainless steels. The stainless steel used has been the normal grade, neither high (H) nor low (L) grade. For the nuclear system piping, the principal steels used have been Types 304, 316, and the casting equivalents, CF8 and CF8M. Grades such as 304 H have not been used for piping.

2. The concern for carbide precipitation has been misplaced because the associated loss of corrosion resistance needs to be considered in the context of the service environment. For example, the reactor coolant system environment in PWR plants like Diablo Canyon is significantly different than the oxygenated water conditions which have caused concern for BWR recirculation piping. The PWR reactor coolant conditions are

not aggressive to the fabricated stainless steels which have been used at Diablo Canyon. Additionally, the welding of the nuclear system piping has been appropriately controlled to minimize any reduction in corrosion resistance. These welding controls included control of weld heat input and the use of low interpass temperatures. Thus, the use of 304, and 316 piping, and the cast equivalent stainless steels is not a concern. There are some systems at Diablo Canyon which do require increased corrosion resistance. In these systems, appropriate corrosion resistant material has been specified and is used.

3. The allegation is false regarding the removal of all high carbon stainless steel at San Onofre. There was no high carbon stainless steel pipe at San Onofre. But stainless steel with carbon content greater than .04% was used. There have been a few cases of 304 stainless steel piping leakage at San Onofre Unit 1. These have been analyzed and appropriate actions have been taken. These few failures have been attributed to special localized environmental conditions external to the pipe. A small amount of pipe has been replaced. There are thousands of feet of the originally installed grade 304 stainless piping. This piping has not cracked or leaked and is acceptable. There is no plan to replace this piping.

4. An ultrasonic and dye penetrant testing program designed to detect stress corrosion cracks is in place at Diablo Canyon. This program is applied in accordance with ASME Section XI. No corrosion cracking of piping has been found in Diablo Canyon piping.

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The inspection program is repeated during each Plant refueling operation. Therefore, should any degradation of weld quality begin, it will be detected before impacting plant safety.

JI #194, Supplemental Motion at 11.

It is alleged that:

> To date management has not responded to internal protest of the error reversing maximum and minimum requirements for the amount of carbon in stainless steel. (citing 1/23/84, Anon. Aff. at 8.) The time log (sic) would be understandable, except that PGandE claims the plant is ready to operate.

1. PGandE is not aware of the anonymous affiant's internal protest, and must assume the protest is also anonymous. However, since the concerns stem from lack of understanding of

   A. material specifications,

   B. welding process control benefits,

   C. corrosion environments where these materials are used,

   D. false information regarding San Onofre stainless steel piping replacement,

it would be understandable that the concern has not escalated to management's attention.

Dated: March 19, 1984

M. TRESLER

F.C. BREISMEISTER

R.D. KERR

C.H. NICHOLS

Subscribed and sworn to
before me this 19th day
of March, 1984

Ida Dutra
Notary Public in and for the
County of San Luis Obispo
State of California.
My commission expires
January 2, 1987

OFFICIAL SEAL
IDA DUTRA
NOTARY PUBLIC - CALIFORNIA
SAN LUIS OBISPO COUNTY
My comm. expires JAN 2, 1987

INTEROFFICE MEMORANDUM

Diablo Canyon Project

PACIFIC GAS AND ELECTRIC COMPANY
BECHTEL POWER CORPORATION

To Jerry Arnold

From Myron Leppke

Of Onsite Project Engineering Group

At Jobsite Extension 3507

Date January 25, 1984

File No 912

Subject DCPP Unit 1 and 2
Carbon Content Requirement
for Stainless Steel

This is a response to a letter from H. Karner to J. Arnold dated 1/17/83 (1984) on the same subject.

The notation of concern (stainless steel material of carbon content less than 0.04% shall not be substituted without approval of PGandE) was applied to the specification to assure that the material used in the construction of piping systems was consistent with the Stress Analysis of that piping. In general, the minimum carbon content is required for "H" grades of stainless steel and results in a higher code stress allowable at elevated temperature.

This practice is consistent with plants of Diablo Canyon's vintage. It is recognized that the use of higher carbon content stainless steel may result in greater potential for carbide precipitated stress corrosion cracking. This potential, however, is not considered to create an unacceptable risk to plant systems in a PWR. Newer plants do use the "L" grade of stainless steel for added protection from the cracking problem. At Diablo Canyon, the Inservice Inspection Program required to comply with the latest revision of ASME Section XI is designed to identify any adverse consequences of use of higher carbon contens allowed by the specified ASTM for applicable grades of stainless steel.

Should you have further questions in this matter, please call.

M. E. Leppke
Onsite Project Engineer

MEL/JAL:kms

Reply Requested: No

: SChitnis
GHMoore
GVCranston
CNichols

SMF-0636

202

10. Welded S.S. pipe conforming to ASTM A 358 Class I of same grade may be substituted wherever A 312 seamless construction is specified in sizes 8" or larger. Where ASME Boiler & Pressure Vessel Code Sect. XI inservice inspection requirements make seamless desirable, it should be used where available.

11. Stainless steel materials of carbon content less than 0.04% shall not be substituted without approval of P.G.&E. Co.

12. No bending thinning allowance is made on the calculations of minimum wall of piping listed under the various piping specifications. Any piping to be bent must meet or exceed the minimum wall thicknesses listed after bending, or meet or exceed the minimum wall thickness of the nominal wall piping Specs. after bending. This must e verified by ultrasonic or other measuring methods or a bending thinning allowance made for piping in the bent sections of pipe per ANS B31.1.0 - 1967, Table 102.4.5.

13. ASTM A 53 pipe shall not be used in Code Class A or B (B 31.7 Class I or II) Systems but may be used in B 31.1 Systems and B 31.7 Class III, if allowed by the particular piping Spec.

14. A 105 Grade I or II Fittings ordered prior to 1971 Revision of A105 are acceptable.

DESIGN CONDITIONS
700 PSIG, 400 °F

PIPE

2" & Under	Schedule 40S, Seamless Stainless Steel ASTM A312 Grade TP 304.
2½" - 8"	Schedule 40S, Seamless Stainless Steel ASTM A312 Grade TP 304 with Supplementary Requirement S1.
10" - 12"	Schedule 40S, Seamless Stainless Steel ASTM A376 Grade TP 304 with Supplementary Requirement S1 or Electric Fusion Welded ASTM A358 Grade 304 with Supplementary Requirements S1 & S2.
14"	Schedule 40, Seamless Stainless Steel (Same as Above)

FITTINGS

2" & Under	3000 Lb. Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304.
2½" - 14"	Schedule to Match Pipe, Butt-Welding Ends, Stainless Steel ASTM A403 Grade WP 304 with Supplementary Requirements S1 & S2.

FLANGES

2" & Under	600 Lb., ¼" Raised Face, Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304.
2-1/2" & Over	600 Lb., ¼" Raised Face, Welding Neck, Forged Stainless Steel ASTM A182 Grade F304. Bore to Match Pipe Wall Thickness.

CHG.	DATE	DESCRIPTION	GM	BY	CH.	APP'D.
7	3-7-73	REV. BOLT SPEC.		GAB	KCS	[illegible]
6	10-8-71	REVISED AND REISSUED		GK	GAB	AGW
5	11-23-70	REISSUED - NO CHANGES		RLB	[illegible]	AGW
4	1-5-70	REV. PIPE & FITTINGS WALL THICKNESS, DELETED NOTE		SKB		AGW
3	10-24-69	REV. BOLTS & NUTS MATL SH. 2		[illegible]	[illegible]	[illegible]
2	8-28-69	ADDED NOTES 1 & 2; REV. PIPE WALL THICKNESS		SKB	SKB	[illegible]
1	10-30-68	REVISED DES. COND. & MATL FOR 12"-14" PIPE & FITTINGS		SKB	SKB	[illegible]

APPROVED BY: AGW

SUPV. ENG. S. Boghosian
DSGN. S.K.B.
DR. P. Kodani
CH. Brenton
O.K. RHS/GAB
DATE 8-14-68 SCALE None

MECHANICAL DESIGN STANDARD
DESIGN
PIPING SPECIFICATION "S1"
Department of Engineering
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

DRAWING LIST
SUPERSEDES
SUPERSEDED BY
SHEET NO. 1 2 SHEETS
DRAWING NUMBER 047283 CHANGE 7

RM INDEXED REV. 7

35 M/M Dwg

204

BOLTS	Bolt-Stud, Stainless Steel, ASTM A193 Grade B8.
NUTS	Hex Nuts, Heavy Series, Semi-Finished, Stainless Steel ASTM A194 Grade 8.
GASKETS	0.175" Thick, Flexitallic, Style CG.

NOTES:

DESIGN CONDITIONS
150 PSIG, 500°F
255 PSIG, 150°F

PIPE

2" & Under	Schedule 40S, Seamless Stainless Steel ASTM A312 Grade TP 304.
2½" -6"	Schedule 10S, Seamless Stainless Steel ASTM A312 Grade TP 304.
8"	Schedule 10S, Welded Stainless Steel ASTM A358 Grade TP 304.
10"-24"	¼" Nominal Wall Thickness, Welded Stainless Steel ASTM A358 Grade TP 304

FITTINGS

2" & Under	3000 Lb. Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304, Bored to Match Schedule 40S Pipe.
2½" - 8"	Schedule 10S, Butt-Welding Ends, Seamless Stainless Steel ASTM A403 Grade WP304.
10" - 24"	1/4" Wall Thickness, Butt-Welding Ends, Welded Stainless Steel ASTM A403 Grade WP 304.

FLANGES

2" & Under	150 Lb. 1/16" Raised Face, Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304, Bored to Match Schedule 40S Pipe.
2½" & Over	150 Lb., 1/16" Raised Face, Welding Neck, Forged Stainless Steel ASTM A182 Grade F304, Bored to Match Pipe Wall Thickness.

RM INDEXED REV. 6

35 MM FILM

CHG.	DATE	DESCRIPTION	GN	BY	CH.	APP'D.
6	3-7-73	REV. DESIGN COND TO 255 PSIG AT 150°F, REV. PIPE SPEC.	GAB	KCL	[illegible]
5	10-8-71	REVISED AND REISSUED	GK	GAB	[illegible]
4	11-23-70	REISSUED - NO CHANGES	RLB	[illegible]	[illegible]
3	1-5-70	ADDED "NOMINAL" TO 18"-24" PIPE WALL THICKNESS	AKB		[illegible]
2	10-24-69	REV. BOLTS & NUTS MATL. SH. 2	JHH	JHH	[illegible]
1	8-28-69	REV. PIPE ASTM SPEC. & SCHEDULE, REV. NOTE 2	AKB	AKB	[illegible]

APPROVED BY [illegible]

SUPV. BY S. Boghosian
DSGN. S.K.B.
DR. P. Kodani
CH. Brancco
O.K. RHST

DATE 8-14-68
SCALE None

MECHANICAL DESIGN STANDARD
DESIGN
PIPING SPECIFICATION "S2"
Department of Engineering
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

DRAWING LIST
SUPERSEDES
SUPERSEDED BY
SHEET NO. 1 of 2 SHEETS
DRAWING NUMBER 047284
CHANGE 6

206

BOLTS	**Machine, Hex Head, Stainless Steel ASTM A193 Grade B8.**
NUTS	**Hex Nuts, Heavy Series, Semi-Finished, Stainless Steel ASTM A194 Grade 8.**
GASKETS	**0.175" Thick, Flexitallic, Style CG.**

NOTES:

1. No Threading is Allowed for Material in This Spec.
2. Additional Supplementary Testing Required on Pipe and Fittings as Required by ANS B31.7 Class Applicable to a Particular System Must Be Performed.
3. No Bending is Allowed for This Spec.

RM INDEXED REV — 6

DESIGN CONDITIONS
370 PSIG, 650°F
495 PSIG, 300°F
550 PSIG, 200°F

PIPE

2" & Under	Schedule 40S, Seamless Stainless Steel ASTM A312 Grade TP 304.
2½" - 12"	Schedule 40S, Seamless Stainless Steel ASTM A312 Grade TP 304 with Supplementary Requirement S1 or Welded Stainless Steel ASTM A358 Grade 304 with Supplementary Requirement S1 & S2.

FITTINGS

2" & Under	3000 Lb. Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304.
2½" & Over	Schedule 40S, Butt-Welding Ends, Seamless or Welded Stainless Steel ASTM A403 Grade WP 304 with Supplementary Requirements S1 & S2.

FLANGES

2" & Under	300 Lb., 1/16" Raised Face, Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304.
2½" - 12"	300 Lb., 1/16" Raised Face, Welding Neck, Forged Stainless Steel ASTM A182 Grade F304.

BOLTS

Hex HeadBolts, Heavy Series Semi-Finished, Stainless Steel ASTM A193 Grade B8.

NUTS

Hex Nuts, Heavy Series, Semi-Finished, Stainless Steel ASTM A194 Grade 8..

GASKETS

0.175" Thick, Flexitallic, Style CG,

CHG.	DATE	DESCRIPTION	BY	CH.	APP'D.
7	3-7-73	REVISED BOLT SPEC.	GS	[illegible]	[illegible]
6	10-8-71	REVISED AND REISSUED	GK	GLS	[illegible]
5	11-23-70	REISSUED - NO CHANGES	RLB	[illegible]	[illegible]
4	1-6-70	REV PIPE MATERIAL DESCRIPTION	LRS		[illegible]
3	10-24-69	REV. BOLTS & NUTS MATL.	[illegible]	[illegible]	[illegible]
2	8-28-69	ADDED PIPE INFO; REV. FLG MATL GRADE	LRS	LRS	[illegible]
1	4-23-69	ADDED DESIGN CONDITION & REV FLANGE MATL.	LRS	LRS	[illegible]

APPROVED BY

SUPV. BY S. Boghosian
DSGN. S. K. B.
DR. P. Kodani
CH. Brantley
O.K. RHS/GMW
DATE 8-14-68
SCALE None

MECHANICAL DESIGN STANDARD
DESIGN
PIPING SPECIFICATION "S3"
Department of Engineering
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

DRAWING LIST
SUPERSEDES
SUPERSEDED BY
SHEET NO. SHEETS
DRAWING NUMBER 047285
CHANGE 7

AM INDICATED REV. 7

35 M/I

208

DESIGN CONDITIONS
1400 PSIG, 650°F
1500 PSIG, 350°F
1750 PSIG, 200°F

PIPE

½" - 2"	Schedule 80S, Seamless Stainless Steel ASTM A312 Grade TP 304.
2½" - 6"	Schedule 80S, Seamless Stainless Steel ASTM A312 Grade TP 304. with Supplementary Requirement S1.
8"-16"	Schedule 100, Seamless Stainless Steel ASTM A312 Grade TP 304 with Supplementary Requirement S1 or Welded Stainless Steel ASTM A358 Grade TP 304 with Supplementary Requirements S1 & S2.

FITTINGS

2" & Under	3000 Lb. Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304.
2½" - 6"	Schedule 80S, Butt-Welding Ends, Seamless Stainless Steel ASTM A403 Grade WP 304 with Supplementary Requirements S1 & S2.
8"-16"	Schedule 100, Butt-Welding Ends, Seamless Stainless Steel ASTM A403 Grade WP 304 with Supplementary Requirements S1 & S2.

FLANGES

2" & Under	1500 Lb. 1/4" Raised Face, Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304.
2½" - 16"	1500 Lb., 1/4" Raised Face, Welding Neck, Forged Stainless Steel ASTM A182 Grade F304, Bored to Match Pipe Wall Thickness.

CHG.	DATE	DESCRIPTION	GM	BY	CH.	APPD.
6	3-7-73	REVISED BOLT SPEC.		GAB	KCS.	RGW
5	10-8-71	REVISED AND REISSUED		GK	GLB	WGW
4	11-23-70	REISSUED - NO CHANGES		RIB	[illegible]	[illegible]
3	1-5-70	REV. 8-16" PIPE & FITTINGS SCH.; ADD NOTES		SKB		GW
2	10-24-69	REV. BOLTS & NUTS MATL. SH. 2		[illegible]	[illegible]	[illegible]
1	8-28-69	REV. DESIGN COND., PIPE SIZES & MATL. AND FLG. RATING		SKB	SKB	WGW

APPROVED BY: [signature]

SUPV. BY S. Boghosian
DSGN. S.K.B.
DR. P. Kodani
CH. Branson
O.K. RHS/GM
DATE 8-14-68 SCALE None

MECHANICAL DESIGN STANDARD
DESIGN
PIPING SPECIFICATION "S5"
Department of Engineering
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

DRAWING LIST
SUPERSEDES
SUPERSEDED BY
SHEET NO. 1 2 SHEETS
DRAWING NUMBER 047287 CHANGE 6

209

RM DLXLD REV. 6

BOLTS	Bolt-Stud, Stainless Steel ASTM A193 Grade B8.
NUTS	Hex Nuts, Heavy Series, Semi-Finished, Stainless Steel ASTM A194 Grade 8.
GASKETS	0.175" Thick, Flexitallic, Style CG.

NOTES:

1. No bending allowance is included in these nominal wall thicknesses, any piping bent must not be less than minimum listed wall thickness for that Schedule Pipe After Bending.
2. 900# forged stainless steel ASTM A182 Grade F316 flanges may be used instead of 1500# ASTM A182 Grade F304 called out above.

RM INDEXED REV. 6

DESIGN CONDITIONS
2485 PSIG, 680°F
2510 PSIG, 650°F
2800 PSIG, 200°F

PIPE

2" & Under	Schedule 160, Seamless Stainless Steel ASTM A376 Grade TP 304.
2½" & Over	Seamless Stainless Steel ASTM A376.
2½" - 3"	Schedule 160, Grade TP304 with Supplementary Requirements S1 & S3.
4"	Schedule 120, Grade TP 316 With Supplementary Requirements S1 & S3.
6"	Schedule 160, Grade TP 316 with Supplementary Requirements S1 & S3.
8" - 10"	Schedule 140, Grade TP 316 With Supplementary Requirements S1, S2 & S3.
12" - 16"	Schedule 160, Grade TP 316 With Supplementary Requirements S1, S2 & S3.

Supplementary Requirements S1, S2 & S3 to be Performed on One End Each Length.

FITTINGS

2" & Under	6000 Lb., Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F304.
2½" - 16"	Butt-Welding Ends, Seamless Stainless Steel ASTM A403 with Supplementary Requirements S1, S2, & S3, Grade and Schedule to Match Pipe.

FLANGES

2" & Under	1500 Lb., 1/4" Raised Face, Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F316. Bored to Match Pipe.
2½" - 16"	1500 Lb., 1/4" Raised Face, Welding Neck, Forged Stainless Steel ASTM A182 Grade F316, Bored to Match Pipe Schedule.

CHG.	DATE	DESCRIPTION	BY	CH.	APP'D.
7	3-7-73	REV. SUPPL. REQMNT FOR 6" PIPE, REV. BOLT SPEC.	GAB	KCA	
6	10-8-71	REVISED AND REISSUED	GK	GLB	
5	11-23-70	REISSUED - NO CHANGES	RLB		
4	3-31-70	REVISED & REDRAWN	AKB	KD	
3	1-5-70	ADDED SUPPLEMENTARY REQTS TO PIPE & FITTINGS	AKB		

APPROVED BY

SUPV. BY S. Boghosian
DSGN. S.K.B.
DR. P. Kodani
CH. KB
O.K. RHS
DATE
SCALE

MECHANICAL DESIGN STANDARD
DESIGN
PIPING SPECIFICATION "S6"
Department of Engineering
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

DRAWING LIST
SUPERSEDES
SUPERSEDED BY
SHEET NO. 1 2 SHEETS
DRAWING NUMBER 047288
CHANGE 7

GM INDEX

35 MM Neg.

60991

BOLTS	**Bolt-Stud, Stainless Steel ASTM A193 Grade B8.**
NUTS	**Hex Nuts, Heavy Series, Semi-Finished, Stainless Steel ASTM A194 Grade 8.**
GASKETS	**0.175" Thick, Flexitallic, Style CG.**

NOTES:

1. Pipe & Fittings on this Specification, where required by ANS B31.7 Class Applicable for the Piping System Involved, Shall Receive the Additional Volumetric Analysis Required.

RM INDEXED REV. 1

Attachment I
Response to NRC #1199 & #1456
Page 1 of 1

DESIGN CONDITIONS
50 PSIG, 100°F

PIPE

2" & Under — Schedule 10S, Seamless Stainless Steel ASTM A312 Grade TP 316.

FITTINGS

2" & Under — 3000 LB., Socket Welding Ends, Forged Stainless Steel ASTM A182 Grade F316.

FLANGES

2" & Under — 150 LB., Raised Face, Socket Welding Ends, Forged Stainless Steel ASTM A192 Grade F316

BOLTS — Bolts, Hex Head Stainless Steel ASTM A193 Grade B8.

NUTS — Hex Nuts, Heavy Series, Semi-Finished, Stainless Steel ASTM A194 Grade 8.

GASKETS — 1/16" Thick, Johns-Manville - JM Style 86A or Approved Equivalent.

NOTES

1. Used for Acid Service
2. No Bending is Allowed for this Spec.

RM INDEXED REV. 3

APPROVED BY	CHG.	DATE	DESCRIPTION	GM	BY	CH.	APP'D.
	3	2-1-72	REVISED BOLT SPEC.		GR	GLO	
	2	10-8-71	REVISED AND REISSUED		GR	GLO	
	1	11-13-70	CORRECTED TO DATE		A.L.B.		

SUPV. BY S. BOGHOSIAN
DSGN. S. K. B.
DR. STD.
CH.
O.K.
DATE 10-8-70 SCALE NONE

MECHANICAL DESIGN STANDARD
DESIGN
PIPING SPECIFICATION "S8"
DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

DRAWING LIST
SUPERSEDES
SUPERSEDED BY
SHEET NO. SHEETS
DRAWING NUMBER 047290 CHANGE 3

23

SPECIFICATION FOR SEAMLESS AND WELDED AUSTENITIC STAINLESS STEEL PIPE

SA-312

W83

(Identical with ASTM Specification A 312-82a except for the addition of a minimum carbon requirement for Grade S30815, and the addition of 5.4 Discard)

1. Scope

1.1 This specification covers seamless and straight-seam welded austenitic steel pipe intended for high-temperature and general corrosive service.

NOTE 1—When the impact test criterion for a low-temperature service would be 15 ft·lbf (20 J) energy absorption or 15 mils lateral expansion, some of the austenitic stainless steel grades covered by this specification are accepted by certain pressure vessel or piping codes without the necessity of making the actual test. For example, Grades 304, 304L, and 347 are accepted by the ASME Pressure Vessel Code, Section VIII Division 1, and by the Chemical Plant and Refinery Piping Code, ANSI B31.3, for service at temperatures as low as −425°F (−254°C) without qualification by impact tests. Other AISI stainless steel grades are usually accepted for service temperatures as low as −325°F (−198°C) without impact testing. Impact testing may, under certain circumstances, be required. For example, materials with chromium or nickel content outside the AISI ranges, and for material with carbon content exceeding 0.10 %, are required to be impact tested under the rules of ASME Section VIII Division 1 when service temperatures are lower than −50°F (−46°C).

1.2 Grades TP 304H, TP 304N, TP 316H, TP 316N, TP 321H, TP 347H, and TP 348H are modifications of Grades TP 304, TP 316, TP 321, TP 347, and TP 348, and are intended for high-temperature service.

1.3 Optional supplementary requirements are provided for pipe where a greater degree of testing is desired. These supplementary requirements call for additional tests to be made and, when desired, one or more of these may be specified in the order.

1.4 Table X1 of this specification lists the dimensions of welded and seamless stainless steel pipe as shown in ANSI B 36.19. Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of this specification.

1.5 The values stated in inch & pound units are to be regarded as the standard.

NOTE 2—The dimensionless designator NPS (nominal pipe size) has been substituted in this standard for such traditional terms as "nominal diameter," "size," and "nominal size."

2. Applicable Documents

2.1 *ASTM Standards:*

A 370 Methods and Definitions for Mechanical Testing of Steel Products

A 530 Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe

E 381 Macroetched Testing, Inspection, and Rating Steel Products, Comprising Bars, Billets, Blooms, and Forgings

2.2 *American National Standards Institute:*

B2.1 Standard for Pipe Threads

B36.10 Standard for Welded and Seamless Wrought Steel Pipe

B36.19 Standard for Stainless Steel Pipe

3. General Requirements

3.1 Material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A 530 unless otherwise provided herein.

4. Ordering Information

4.1 Orders for material to this specification shall include the following, as required, to describe the desired material adequately:

4.1.1 Quantity (feet, centimetres, or number of lengths).

4.1.2 Name of material (austenitic steel pipe).

4.1.3 Process (seamless or welded).

4.1.4 Grade (Table 1).

4.1.5 Size (NPS or outside diameter and schedule number or average wall thickness).

4.1.6 Length (specific or random) (Section 11).

4.1.7 End finish (Section on Ends of Specification A 530).

4.1.8 Optional requirements (Section 8). (S1 to S4 Supplementary Requirements).

4.1.9 Test report required (Section on Certification of Specification A 530).

TABLE 1 Chemical Requirements

Grade	UNS Designation[A]	Composition, %														
		Carbon, max[B]	Manganese, max[B]	Phosphorus, max	Sulfur, max	Silicon	Nickel	Chromium	Molybdenum	Titanium	Columbium plus Tantalum	Tantalum, max	Nitrogen[G]	Vanadium	Copper	Cerium
TP 304	S30400	0.08	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	...	...	...	...	...	...	...	...
TP 304H	S30409	0.04-0.10	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	...	...	...	...	...	...	...	...
TP 304L	S30403	0.035[B]	2.00	0.040	0.030	0.75 max	8.00-13.0	18.0-20.0	...	...	...	...	...	...	...	...
TP 304N	S30451	0.08	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	...	...	...	...	...	...	...	...
TP 304LN	S30453	0.035	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	...	...	...	...	0.10-0.16	...	...	...
TP 309	S30900	0.15	2.00	0.040	0.030	0.75 max	12.0-15.0	22.0-24.0	...	...	...	...	0.10-0.16	...	...	...
TP 310	S31000	0.15	2.00	0.040	0.030	0.75 max	19.0-22.0	24.0-26.0	...	...	...	...	...	...	...	...
TP 316	S31600	0.08	2.00	0.040	0.030	0.75 max	11.0-14.0[F]	16.0-18.0	2.00-3.00	...	...	...	...	...	...	...
TP 316H	S31609	0.04-0.10	2.00	0.040	0.030	0.75 max	11.0-14.0[F]	16.0-18.0	2.00-3.00	...	...	...	...	...	...	...
TP 316L	S31603	0.035[B]	2.00	0.040	0.030	0.75 max	10.0-15.0	16.0-18.0	2.00-3.00	...	...	...	...	...	...	...
TP 316N	S31651	0.08	2.00	0.040	0.030	0.75 max	11.0-14.0	16.0-18.0	2.00-3.00	...	...	...	0.10-0.16	...	...	...
TP 316LN	S31653	0.035	2.00	0.040	0.030	0.75 max	11.0-14.0	16.0-18.0	2.00-3.00	...	...	...	0.10-0.16	...	...	...
TP 317	S31700	0.08	2.00	0.040	0.030	0.75 max	11.0-14.0	18.0-20.0	3.00-4.00	...	...	...	...	...	...	...
TP 317L	S31703	0.035	2.00	0.040	0.030	0.75 max	11.0-15.0	18.0-20.0	3.00-4.00	...	...	...	...	...	...	...
TP 321	S32100	0.08	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	...	[C]	...	...	...	...	...	...
TP 321H	S32109	0.04-0.10	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	...	[D]	...	...	...	...	...	...
TP 347	S34700	0.08	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	...	...	[E]	...	...	...	...	...
TP 347H	S34709	0.04-0.10	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	...	...	[F]	...	...	...	...	...
TP 348	S34800	0.08	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	...	...	[E]	0.10	...	...	...	...
TP 348H	S34809	0.04-0.10	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	...	...	[F]	0.10	...	...	...	...
TP XM-10	S21900	0.08	8.00-10.00	0.040	0.030	1.00 max	5.50-7.50	19.00-21.50	...	...	...	...	0.15-0.40	...	...	...
TP XM-11	S21903	0.04	8.00-10.00	0.040	0.030	1.00 max	5.50-7.50	19.00-21.50	...	...	...	...	0.15-0.40	...	...	...
TP XM-15	S38100	0.08	2.00	0.030	0.030	1.50-2.50	17.50-18.50	17.0-19.0	...	...	...	...	...	...	...	...
TP XM-19	S20910	0.060	4.00-6.00	0.040	0.030	1.00 max	11.50-13.50	20.50-23.50	1.50-3.00	...	0.10-0.30	...	0.20-0.40	0.10-0.30	...	...
TP XM-29	S24000	0.080	11.50-14.50	0.060	0.030	1.00 max	2.25-3.75	17.0-19.0	...	...	...	...	0.20-0.40	...	...	...
...	S31254	0.020	1.00	0.030	0.010	0.80 max	17.50-18.50	19.50-20.50	6.00-6.50	...	...	...	0.180-0.220	...	0.50-1.00	...
...	S30815	0.05-0.10	0.80	0.040	0.030	1.40-2.00	10.0-12.0	20.0-22.0	...	...	...	...	0.14-0.20	...	...	0.03-0.08

[A] New designation established in accordance with ASTM E 527 and SAE J1086, Recommended Practice for Numbering Metals and Alloys (UNS).

[B] For small diameter or thin walls or both, where many drawing passes are required, a carbon maximum of 0.040 % is necessary in grades TP 304L and TP 316L. Small outside diameter tubes are defined as those less than 0.500 in. (12.7 mm) in outside diameter and light wall tubes as those less than 0.049 in. (1.24 mm) in average wall thickness (0.044 in. (1.12 mm) in minimum wall thickness).

[C] The titanium content shall be not less than five times the carbon content and not more than 0.70 %.

[D] The titanium content shall be not less than four times the carbon content and not more than 0.60 %.

[E] The columbium plus tantalum content shall be not less than ten times the carbon content and not more than 1.00 %.

[F] The columbium plus tantalum content shall be not less than eight times the carbon content and not more than 1.0 %.

[G] The method of analysis for nitrogen shall be a matter of agreement between the purchaser and manufacturer.

[H] Maximum, unless otherwise indicated.

[I] For welded TP 316 and TP 316H pipe, the nickel range shall be 10.0-14.0 %.

NRC Allegations #1200 and 1201

Allegation #1200 Description:

PGandE made a false statement when they stated that ASME is the requirement for welded studs on the containment liner, ESD272 references AWS.

NRC Allegation Paraphrase:

PGandE asserted that the welding of liner studs had been qualified in accordance with ASME requirements. Even assuming that is acceptable, ASME QW 403.1 requires that when you use a different "P" number for the metal the procedure must be requalified. But A307 bolts with the heads cut off do not qualify as acceptable "P" numbers for this work. In fact, A307 is not even listed in QW 422.1 as an acceptable QW material. That is what we used at Diablo Canyon, and there hasn't been any such requalification test to my knowledge.

Allegation #1201 Description:

Welding of A307 studs to the containment liner requires requalification of the procedure because A307 bolting material is not "P1" material.

NRC Allegation Paraphrase:

In PGandE's April 30 response to allegations, specifically GAP #175 (PGandE paragraph #108) the utility asserted that ASME is the requirement for welded studs on the containment liner. In my experience, that is a false statement. ESD #272 references AWS requirements for that work.

These subjects were previously addressed in response to Allegation Nos. 175 and 200 submitted in PGandE letter DCL-84-166 dated April 30, 1984, in response to NRC Allegations #450 and 460 submitted in PGandE letter DCL-84-195 dated May 29, 1984, at pp. 108-115, and in PGandE Response to Joint Intervenors' Motion to Reopen the Record on CQA, Breismeister et al., Aff. at 11-12 (JI 11, 12, and 13). The previous allegations and responses are attached hereto. PGandE did not make a false statement.

First, there is a need to distinguish between the automatic Stud Welding (SW) Process and the activity of welding stud attachments which may be accomplished by a variety of welding processes. Automatic stud welding and welding stud attachments are governed by different procedures. The allegation erroneously assumes that the activities are the same.

ESD 272, which references AWS, is written to comply with AWS D1.1 and details the requirements for the welding of stud attachments when automatic stud welding process equipment is to be utilized. It also details repairs to automatically welded studs and fillet welding of studs using the Shielded Metal Arc Weld (SMAW) process.

When the automatic stud welding process was utilized by Pullman, ESD 272 was specified on the process sheet. However, use of the automatic stud welding equipment and ESD 272 were found to be impractical for the modifications and rework of studs on the containment liner. As a result, PGandE authorized and specified that new studs would be installed using a manual arc welding process. When stud attachments are welded to the liner plate by welding processes other than automatic stud welding, ASME Section VIII governs and ASME welding qualifications apply. Therefore, the process sheets directing the work specified a manual arc welding process, using either a SMAW (WPS 7/8) or a Gas Tungsten Arc Weld (GTAW) procedure (WPS 203).

The studs in question were not welded by the SW process, but were attached either by the SMAW or the GTAW processes. Consequently, the ASME Code is the

correct reference for manual welding of load-carrying attachments to the liner. As previously addressed in Response Nos. 175 and 200, WPS 203 and 7/8, which were used to attach studs to the liner, are both ASME qualified procedures.

GAP #175, Petition at 5.

It is alleged that:

The effects of not following AWS instructions can be illustrated through undersized welds for important safety-related stud welding on the containment liner. Contrary to the AWS requirements in design commitments, a field engineer observed that the welds did not have the full throat filled in. ASME weld criteria had been substituted for that AWS requirement, without evidence of destructive testing to prove that these welds were still acceptable. (citing 2/27/84 Anon. Aff. at 4.)

108. Since the cited anonymous affidavit has not been made available, the specific allegation cannot be addressed. We have no record of stud weld throat deficiencies being identified by a field engineer. There is voluminous Pullman process sheet documentation of visual inspections and torque test data showing that the welds meet design requirements. The allegation is false and misleading by implying that AWS requirements apply to containment liner attachment welds because the ASME Code is the governing code for containment liner plate. The ASME criteria were not "substituted" since the ASME Code is the requirement, not AWS.

109. The welding of liner studs has been qualified by testing in accordance with ASME requirements. This allegation is similar to, but slightly different from, allegations related to the welding of studs to containment liners, as addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Breismeister et al. Aff. at 11-12.

#200, Petition at 12.

It is alleged that:

Mr. Karner completely rewrote a Discrepancy Report that a QC inspector submitted on studs made from unqualified materials that were welded on the containment liner and elsewhere. Mr. Karner censored the DR to remove all references to two of the three unqualified materials Pullman had used -- A-108 and A-307 material. In effect, two-thirds of the proposed DR improperly was verbally dispositioned. (citing 2/25/84 Anon. Aff. at 7.)

27. The allegation appears to arise out of the alleger's lack of understanding of Mr. Karner's procedural responsibilities as QA/QC Manager.

28. Under Pullman's ESD-240, "Field Procedure For Non-Conformance Reporting," the QA/QC Manager is responsible for the review and approval of all Discrepancy Reports (DRs) prior to submittal to PGandE. This review ensures that the alleged discrepant items do actually represent departures from procedures, specifications, or applicable codes and that the recommended disposition of the discrepant items complies with the requirements of Pullman's Quality Assurance Program. The DR is considered "proposed" until Mr. Karner has completed his review.

29. The proposed DR referenced in the allegation declared, inter alia, that the use of ASTM A-108 and A-307 Grade B materials as welding studs was a nonconformance because they allegedly were not P-1 materials as defined in ASME Section IX.

30. During his review of the proposed DR, Mr. Karner determined that A-108 and A-307 Grade B bolts, though not specifically listed in Section IX, do qualify as P-1 materials and that no deviation from approved procedures had occurred in welding them. ASTM A-108 is defined as a P-1 material in ASME code case N71-10. A-307 Grade B, as used at Diablo Canyon, also qualifies as a P-1 material. (See PGandE response, dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Breisneister, et al., Aff. at 12-13.) The inspector who had prepared the proposed DR was informed of Mr. Karner's findings, and a corrected version of the DR was submitted to PGandE as DR 5739.

31. The implication of this allegation is that Mr. Karner has no right to edit DRs prepared by his subordinates. The facts are that Mr. Karner, under approved QA procedures, has the right, responsibility, and obligation to ensure the accuracy of such reports. Mr. Karner discharged this responsibility appropriately.

JI #11, 12, and 13, Motion at 12.

It is alleged that:

Code 7/8 was improperly used to weld threaded weld studs which bolt plates to civil steel on Class I safety-related pipe supports, although the welding process for these studs is not listed within Code 7/8 and bears almost no resemblance to the work legally covered by Code 7/8. (citing Hudson Aff. at 5.)

When a QC inspector reported to management that Code 7/8 was being improperly used to weld threaded studs to the containment liner, Pullman QA manager Harold Karner responded that thousands of studs had been welded that way and yanked the inspector from the assignment. The containment liner is so significant that these studs are the only hardware which can be welded to the surface. (citing Lockert Aff. at A7-8.)

The welding for threaded studs even violated the requirements of Code 7/8, which calls for the use of a backing bar. Instead, process sheets operated by the construction department imposed backgrinding, which is a totally different operation. (citing Hudson Aff. at 5.)

29. Contrary to the allegation, the shielded metal arc welding (SMAW) process used to weld the studs is specified in WPS 7/8. Additionally, the allegation in the Motion is incorrect in stating that studs are the only hardware which can be welded to the containment liner. Pullman installation procedure, ESD 223, paragraph 6.8.2.6 permits Nelson studs, A307 Gr. B, A36, A515, and A516 materials to be welded to the liner plate. The ASME Code Section VIII, the applicable code, specifically allows such attachments.

30. With respect to the backing technique, the WPS 7/8 describes the use of a backing bar, whereas the studs are welded on one side, backgouged to sound metal, and then welded from the gouge side. Both backing bars and

back gouging serve the same purpose by providing backing for the weld puddle and assuring full weld fusion to the weld root. The back gouging and back welding operations were controlled by the process sheets. Therefore, even though back gouging is not specifically identified in WPS 7/8, it is equivalent to the use of a backing bar. In addition, the welding of studs using WPS 7/8 is qualified in accordance with ASME IX.

31. Contrary to Mr. Lockert's reference to WPS 7/8, the WPS being used when Mr. Lockert expressed his concern to Pullman supervision was WPS-203, which utilizes the GTAW process. WPS-203 specified the GTAW process, an ASME IX qualified welding procedure, that is qualified for all the essential variables necessary to install the studs.

32. Finally, Mr. Lockert was not "yanked" from this assignment. As stated in his own affidavit (Lockert at p. A8), Mr. Lockert was not required to inspect the referenced welds to the approved procedures due to his reservations, and another inspector was asked to perform the inspection.

NRC Allegation #1211

Allegation Description:

Challenge of NRC position on cracks in CCW lines at 51 degrees F get condensation and dripping which will affect the weld quality-a Pullman memo 2/10/84 confirms Pullman's knowledge of weld problems.

NRC Allegation Paraphrase:

Initially I question Mr. Bishop's inference that water in the lines is not significant when a 50 degree preheat temperature is maintained. That is contrary to well recognized metallurgical principles, in my opinion. There is a visible effect on the lines when there is water inside. At 51 degrees, I have observed condensation and dripping. It is also too simplistic a solution to be true.

Pullman knew better, as well. February 10, 1984 memorandum (Exhibit 3) recognized, "The CCW system #14 is in full operation. This requires a value judgement....if and when an acceptable weld can be made on a line full of water. The rate of flow in a particular line and how the heat dissipation will affect your weld." The NRC's ignorance raises questions whether Pullman and PGandE kept the staff informed of the risks and potential quality consequences from welding on water filled lines.

The technical analysis of welding on water-filled lines was provided in response to Allegations III-14 and III-54 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegations and responses are attached hereto.

Welding at 50°F on carbon steel A53 piping filled with water is not a problem because the material is not sufficiently hardenable, and because the weld cooling rates are less than the critical cooling rate. No specific contrary data has been presented. The anonymous alleger offers an opinion and

refers to supposed "well recognized metallurgical principles" without identifying them.

The Pullman memo referred to in the allegation raised a concern which was properly addressed by knowledgeable personnel. The welds were successfully made in accordance with appropriate procedures and proper metallurgical practices, and they were examined and tested as required.

III-14 and III-54

It is alleged that:

For example, in PG&E's March 8, 1984 letter to the NRC, DCL-84-097 (attached as Exhibit 1), PG&E tries to claim that there are no problems with welding on the component cooling water (CCW) lines when they are filled with water. However, PG&E's attempted explanation is full of false and misleading statements to support the false conclusion that there is no problem with this welding.

First of all, PG&E says that the pre-heat requirement was satisfied because the water in the pipes was greater than 50°F. The professor I spoke with, however, said that it is not even properly considered a pre-heat unless the temperature is at least 100°F. At 50°F, the temperature isn't even high enough to drive off any moisture from the outside of the pipes.

It is interesting that PG&E doesn't even mention what the temperature of the water was. I suspect that PG&E is intentionally trying to hide the fact that the water in the component cooling water system, as it travels to the components that need to be cooled, is normally at about 62°F to 65°F, according to my own knowledge and what I've been told by other people who are still out at Diablo. This is because the component cooling water goes through a heat exchanger which cools it to the temperature of the ocean, which is usually roughly between 62°F and 65°F. PG&E is misleading the reader when it says that the water temperature is "well above 50°", because it isn't enough above 50° to even drive off the moisture, much less to amount to a pre-heat.

Another way of looking at this is to consider the fact that pre-heat values are established partly based upon the thickness [sic] of the material, and it is assumed that the back of the material is in air. However, since water has a much higher thermal conductivity rate than air, the water-filled pipe acts like a thicker section of base metal, which would require a higher pre-heat value.

When PG&E failed to mention the actual temperature of the CCW system, it tried to obscure a very significant fact, and once the temperature is considered, it is obvious that welding to the CCW lines with such cold water in them would be very difficult because of the rapid cooling of the weld and the likelihood of cracking would be greatly increased.

Likewise, PG&E omits the crucial facts when it says that the main concern is cold cracking caused by hydrogen. As the professor confirmed, the primary problem here is the quenching effect of the water. Because of the rapid cooling, the weld itself can crack, and there can be underbead cracking beneath the weld in the parent material.

This cracking problem is compounded by the fact that the welding was done on thin sections. The thin pipe walls would be rapidly cooled by the cold water, increasing the quenching effect, and making underbead cracking all the more likely. Because of this, PG&E is blatantly wrong when it says that the thinness of the sections "eliminates the possiblity of cracking." PG&E should have said that it increases the likelihood of cracking.

PG&E doesn't say that Pullman had actually qualified any procedure to weld onto water-filled lines, and I strongly doubt that Pullman has qualified any such procedure. PG&E attempts to evade the issue by saying that an engineer "reviewed and accepted" the welding before it was done. Whatever that is supposed to mean, it doesn't meet the code requirement for qualifying the procedure that is to be used.

PG&E is also wrong in saying that the use of low-hydrogen rods "minimizes the possibility" of cracking. To begin with, hydrogen only compounds the problem of the quench rate. But in addition, some hydrogen is diffused into the metal even from low-hydrogen electrodes, and there will also be hydrogen from the moisture which the cold lines tend to collect, and which would not have been driven off because there was no real pre-heating. Thus, hydrogen cracking is an additional problem.

PG&E's excuses haven't explained away the fact that cracking is likely, primarily because of the fast quench rate, which PG&E totally ignored in its analysis. If PG&E actually wanted to eliminate the possibility of cracking, it should physically examine the welds themselves with appropriate tests, such as hardness tests to check the hardness of the welds and of the heat-affected zone. Photomicrographs of the structures involved would also be recommended for this circumstance.

The professor summed up PG&E's response as being due "either to gross ignorance or to a cover-up." I agree. Either PG&E does not understand the basic concept of the rate of cooling, or they are deliberately trying to mislead the uninitiated. (2/21/84 Anon. Aff., Attachment 7, at 1-5.)

"I have read Pacific Gas and Electric's (PG&E) March 8, 1984 statement to the Nuclear Regulatory Commission, DCL-84-097, concerning welding on Component Cooling Water (CCW) piping while it was filled with water. PG&E makes a number of material false statements in that letter, that seriously affect the ultimate conclusion about the likelihood of cracking in the component cooling water lines.

"In particular, PG&E says that the fact that the sections welded were thin 'eliminates the possibility of cracking.' This is absurd. First of all, welding with water in the line means that as soon as a weld pass is made, the weld is 'quenched' by the water, which acts as a heat sink. Because of the rapid cooling of the thin material, it increases the possibility of cracking rather than eliminating it.

"Not only is there a possibility of cracking, but cracking of these welds is probably occurring in the field. I was told within the past week of two welders who were working on a CCW line that their weld bead actually froze on contact. This means that the rate of quenching is so high as to increase the likelihood that cracking or a lack of fusion will occur.

"In order to tell if these welds are cracked, Non-Destructive Examination (NDE) should be conducted. However, Pullman does not require any NDE for this welding, and none is done.

"In addition to this, I have personally observed problems with porosity and cracking at the start and termination of the bead on these welds. If cracking is occurring on the surface, it raises the likelihood that there is porosity or cracking in the root pass, and in subsequent weld passes.

"Because of these factors, I think that PG&E's statement is false when it says that cracking is unlikely in the welding done to the component cooling water system piping while it was filled with water. In fact, it is impossible to tell the extent of the cracking in the welding to these lines, and it should be thoroughly examined to determine the extent of cracking." (3/22/84 Clewett Aff. at 1-2.)

Both the allegations from the NDE inspector, and the other from an anonymous alleger with secondhand hearsay from an anonymous professor, have no technical basis and are in fact metallurgically

unsupportable. A CCW branch connection with reinforcing saddle that had been welded while filled with water has been sacrificed, examined, and tested. There were no cracks. The metallurgical structure and hardnesses in the weld and heat affected zones (HAZ) were such that cracking would not be expected. The metallurgical structure is ferritic and pearlitic with some bainite. The CCW pipe Heat Affected Zone (HAZ) had maximum hardness of only HB 210, the reinforcing pad maximum hardness was HB 255. This clearly shows there is a wide margin and no basis for concern. This data proves the allegers are wrong.

It is alleged that temperatures less than 100°F are not considered preheat. This is wrong. The B31.1 and B31.7 codes which governs the piping work at Diablo Canyon both list 50°F preheat for the materials and thicknesses of concern. ASME Section I and Section VIII also refer to 50°F as preheat. The AWS D1.1 permits prequalified welding of the specific A53 material with the low hydrogen electrodes with a preheat of 32°F.

Pullman's welding program requires the material to be dry independent of the preheating requirement. Thus, surface moisture is not a problem. In relation to this surface moisture, the professor should recall that underwater welding can produce acceptable results.

The temperature of the water is not significant. Whether it was 50°, 70°, or 100°F, it would have minimal affect on the actual

cooling rate in the weld, HAZ, or base metal in the temperature range of concern. The 50°F preheat would have been valid and acceptable for much thicker material in accordance with code requirements and engineering fundamentals.

The primary concern for this type welding operation is hydrogen induced cold cracking in the weld HAZ, sometimes referred to as underbead cracking. Hydrogen induced cracking requires a source of hydrogen and a susceptible microstructure.

The quenching effect of water needs to be considered in relation to the material's critical cooling rate. Rapid cooling by itself is not a concern. For example, many plain low carbon steel materials are water cooled in the forming processes and others are intentionally quenched to refine their grain size and improve mechanical test results without detrimental effect. In fact the effects are beneficial. The fact is that for underbead cracking to be a concern the weld cooling rate must be so very great that the HAZ will form a hardened microstructure. For plain low carbon steel such as A53, the critical cooling rate to form a hardened microstructure is very rapid, approximately 100°F per second at 1000°F. Unfounded speculation about cooling rates due to water quenching is absurd without considering the second half of the requirement, the material's critical cooling rate.

Thinness is important as it relates both to heat transfer and to restraint. As pointed out by the allegers, the water backing causes the material to cool more rapidly, as if the material were thicker. The heat dissipation issue by cooling water is not by itself a real concern. Weld cooling rates need to be considered in relation to the material's hardenability and critical cooling rate. When weld cooling rates and material critical cooling rates are considered together there is no concern. As stated previously, the material did not harden. Thus there is no concern for heat dissipation. The thin wall large diameter pipe also minimizes restraint, which is a critical element in developing cracks. Thus PGandE was again correct as regards thin material.

Forty years of industrial and research experience with Battelle underbead cracking tests show that welding with low hydrogen electrodes does not cause cracking in material which is much more hardenable and susceptible to cracking than the A53 pipe. These test data are significant because they demonstrate the importance of the low hydrogen electrodes. They are also significant because the Battelle underbead cracking test almost completely immerses the test coupon in water. Base materials much more susceptible to cracking than A53 pipe have been welded with low hydrogen electrodes and did not crack even though the water temperature was 32°F--ice water. These data also prove there is no real concern for the CCW welding.

The amount of hydrogen necessary to cause cracking is inversely proportional to the hardness and degree of restraint. When low hydrogen electrodes are used, as they were at Diablo Canyon, the HAZ microstructure may be very hard and not crack. When the HAZ microstructure is soft, as in the CCW case, the hydrogen tolerance is great--so great that low hydrogen electrodes were not necessary.

Thus, for the welding on CCW pipe filled with water, there was and is no basis for concern principally because: (1) The base material HAZ did not harden and (2) low hydrogen electrodes were used. There is a double margin.

The welding procedure specification and welders were qualified as required by the codes. There is no code requirement and no technical reason to qualify on water filled pipe.

The allegations regarding weld beads freezing on contact, starting porosity, and surface cracks at terminations relate to welder technique, not to water filled pipe. Weld beads will freeze on contact if the welding current is not set high enough or if the welder moves the arc too rapidly. The presence of water inside the pipe has little or nothing to do with the solidification of weld metal on the outside at temperatures in excess of 2700°F. Porosity, and especially starting porosity, is a welder induced defect generally caused by too long an arc length as controlled by

the welder. Surface cracks, such as the crater cracks at the termination of weld bead, are also induced by poor welding technique. Starting porosity and crater cracks are commonly ground out and the weld reworked.

The welds in question have been examined, tested, and accepted. A CCW branch connection was sacrificed and examined and found to be crack free, and also found to have microstructure which was not crack susceptible.

The paragraphs above address the specific issues raised by the allegations. The following is a simple and direct discussion of the underlying technical concerns.

Hydrogen cracking and, in particular, underbead cracking, did not occur in these welds because the two separate conditions which must exist to induce the cracks were not present in the CCW welds. These two conditions are a susceptible microstructure and the amount of hydrogen present.

A susceptible microstructure must be present. Microstructure is related to both the weld cooling rate and the materials being welded. Welding cooling rates need to be considered along with the material's critical cooling rate (CCR). Provided the weld cooling rate is slower than the CCR, cracking will not be a problem. The CCR

is dependent upon the material's chemical composition. Cooling rates more rapid than the CCR cause a hardened microstructure to form. The ease of forming a crack susceptible microstructure is described as "hardenability." One approximation of "hardenability" is the carbon equivalent. Steels with higher carbon equivalents are more hardenable, have slower CCRs, and are more susceptible to cracking.

The A53 CCW pipes at Diablo Canyon are basically plain carbon steels and are essentially nonhardenable. These steels have such rapid CCRs that, with normal welding heat input, it is not possible to form a crack susceptible microstructure. In this case, the material A53 Grade B, is such that a very high cooling rate is required to obtain the necessary microstructure. This very high cooling rate is not achieved even with water backing. This has been demonstrated by metallographicaly examining one of the CCW welds. This examination shows that the HAZ of the CCW piping is primarily ferrite and pearlite with some bainite. The maximum hardness of the CCW pipe was HB 210. The maximum hardness of the reinforcing pad was a HB 255. This structure is not susceptible to hydrogen or underbead cracking.

Hydrogen must be present in sufficient quantity to initiate cracking. As stated before, low hydrogen welding electrodes were stored and controlled to preclude hydrogen pickup. This assures that the amount of hydrogen charged into the weld is below the amount required for cracking welds even those with susceptible

microstructure. In this case, the excellent filler material control system would ensure a crack-free weld.

The amount of hydrogen required to cause cracks is primarily related to the material hardness. If a material is soft (as is the CCW material), then the hydrogen is not a concern and ordinary non-low hydrogen electrodes would have been acceptable.

The fact that low hydrogen electrodes were used means that there was a great tolerance for a hardened microstructure. Microstructures significantly harder than were found in the CCW pipe would have been acceptable. Thus, as regards both susceptible microstructures and hydrogen, the water filled CCW welding had significant margins.

NRC Allegation #1212

Allegation Description:

It is a quality assurance violation to base decisions on value judgements for safety-related work that means the work was not controlled by procedure in violation of 10 CFR 50 Appendix B requirements.

NRC Allegation Paraphrase:

In my opinion, it is a quality assurance violation to base decisions on "value judgements" for safety-related work. That means that the work was not controlled by procedures, in violation of 10 CFR 50 App. B requirements

The basic premise of this allegation is that the exercise of a value judgment is, somehow, a violation of 10 CFR 50, Appendix B criteria. The alleger seems to have overlooked the fact that Appendix B itself is written in general terms and requires judgment in the course of both interpreting and implementing its terms.

In addition, value judgment is often an important part of any written procedure. For example, ESD 223 provides, in part:

6 8.2.4 Final Visual

A. All members shall be visually plumb, true to line, and substantially free from bends, twists, or excessive gaps.

B. The final surface of all welds shall be substantially free of sharp surface irregularities, excess surface slag, slag inclusions, and shall have a good workmanship appearance. Excessive surface irregularities may be removed by chipping or grinding provided the weld size specified on the support drawing is maintained.

Clearly, the terms "substantially free" and "good workmanship appearance" imply that some sort of judgment will be used by the inspector.

This allegation is merely an opinion which is contrary to accepted Quality Assurance fundamentals.

NRC Allegation #1213

Allegation Description:

Contrary to the NRC's position that water was not flowing during CCW welding, a 2/10/84 Pullman memo refutes this statement, and the alleger has been welding with water flowing in the lines.

NRC Allegation Paraphrase:

Contrary to Mr. Bishop's confidence before the Commissioners that the water was not flowing during welding, Pullman's Unit II Clearance Coordinator would make no such comment: "I will try to find a way to valve it out but, not drain a section of this system for your work."(Id.) I have seen welding performed with water flowing in the line and protested the line "clearance." I was told it was not my job to verify line clearance, per QC management.

This subject was previously addressed in response to Allegations III-14 and III-54 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegations and responses follow the response to NRC Allegation #1211 above.

The alleger has provided no substantiation that the water was flowing, only evidence that water was in the line. Standard practice regarding welding on water-filled lines is to valve off the line to stop flow, as was proposed by the Unit II Clearance Coordinator, and to open a vent or provide access to surge tanks to prevent the buildup of pressure. Valving off the flow is sufficient; it is not necessary to drain the lines.

NRC Allegation #1215

Allegation Description:

Recently an inspector found through MT that three out of four welds had cracks on CCW pipe attachments, this resulted in undocumented repair.

NRC Allegation Paraphrase:

The NRC staff would be less ignorant of the cause for cracking if they had attempted to speak with knowledgable employee witnesses, before effectively dismissing the concern. I have analysed limited data on the carbon equivalency for the relevant materials and it is susceptible to Hydrogen Assisted Cracking (HAC), which can be caused by embrittlement due to the combined effects of carbon, manganese and silicon. Whatever the cause, the NRC should get the answers before letting Diablo Canyon go to commercial power.

This problem has not been systematically addressed. The cracks still are only sporadically caught and repaired, in an uncontrolled manner without necessary documentation. To illustrate, recently an inspector found through MT that three out of four welds had cracks on CCW pipe attachments. This resulted in undocumented repairs i.e. removal of cracked welds, but did not lead to review of welding procedures used. Until this occurs, the full extent of cracked welds on the CCW line will remain unknown. The plant cannot operate with such serious questions unresolved on vital safety related lines.

The subject of hydrogen assisted cracking and weld embrittlement was previously addressed in response to Allegations III-14 and III-54 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegations and responses follow the response to Allegation #1211 above.

The alleger has neither identified the alleged cracked welds nor provided sufficient detail to allow a specific response. If there were cracks, the

cause may not have been metallurgical but related to other factors, such as poor welder technique.

All B31.7 Class I and II attachment welds are PT- or MT-examined in accordance with ESD 205. When unacceptable indications are found, a Weld Repair Order is initiated. A process sheet is then written to control grinding of the indications and, if necessary, the performance of repair welding as per ESD 221. Thus, the procedures require that all weld repairs be documented.

NRC Allegation #1216

Allegation Description:

Support package 921-49 contains illegal quick fixes, copied signatures, and different revision of the support.

NRC Allegation Paraphrase:

Support package 921-49, included as Exhibit 4, is a good example of significant document and design control breakdowns at Diablo Canyon. This is classified as a non-safety related (class E, B31.1 code) line, however, it is a radwaste system (gas decay) shared between Units I and II. This line, by definition, falls under B31.7 code requirements for nuclear piping. This support package was presented for work and inspection on 6/7/84. As the inspector _____, verify location for deletion per memo 0389, page 2 of 48. This memo from PGandE directs Pullman to remove all items except 4, 5, 6, and 7 of a support built per the design shown on QF-2-9876 as referenced on page 15. Pages 17-20 are the quick-fixed drawings of the new design. This was approved on 2/2/84, and revised on 22/3/84 as even the quick-fixed designs, as engineers approving these rarely look at the field conditions. It is also evident by looking at the voided quick-fixes included as pages 23-27 of 48. Page 7 of 48 is an illegal quick-fix as it's a copy in the actual package, with copied signatures and the work "replacement' as well. This illegal copy is "approved for construction" to the memo from PGandE.

The significant item is that revision 6 was QC accepted on 3/23/84, as evidenced by the "accept" stamp and signatures on page 10 of 48, and the signature on line 13 of field process sheet, page 42 of 48. The support was "accepted by QA pending resolution of reject comments" on 3/28/84, as evedinced by note on back of process sheet (rev.6), page 43 of 48. There is no mention as to what these "reject comments" are on file with Pullman QA, but never became permanent plant-life documentation with the support packages. The support packages are stamped "QA accept dending resolution of comment sheets" are on file with Pullman QA, but never became permanent plant-life documentation with the support packages. The support packages are stamped "QA accept pending resolution of comments, "which is tantamount to falsification of documentation. QA reviewers have been fired for refusing to stamp "accept" on deficient packages, and in the words of a QA reviewer, "the reason we are doing this is because

PGandE wants to see "accept" stamped on these packages." Pullman has no approved procedure for QA acceptance "pending resolution of reject comments."

On this date this support is on engineering hold (o-hold) pending revision. This is evidenced by page 46 of 48 specifying, "layout drilling per DC Rev. 0." It seems strange that a revision 6 drawing is again revised and now called DC Rev. 0 (DC for Diablo Canyon). This revision change, and layout procedure as well, are Bechtel programs. The significant items here are that work was performed to a field initiated quick-fixed design, QA/QC accepted to revision 6, and now PGandE is directing per memoranda the removal of most of this recent work to permit a new design to DC Rev. 0. The new design is shown on pages 47 and 48 of 48, and the only significant revision is the size of the concrete anchors. I have seen many supports redesigned in this manner, and I feel it represents a considerable added expense to the cost of the final support.

This allegation intentionally creates confusion out of a controlled and rational process. It is not surprising that support package 921-49 contains copies of design tolerance changes (quick fixes) with approval signatures and different revisions of the support.

The final support package is an historical record of all work done upon a particular support and, as such, includes all revisions, design tolerance changes (TCs), and work requests related to that support. Because the originals of TCs are in the QA vault with the previously accepted revisions, copies of such TCs, including copied signatures, would be included in the support package currently being used for work. These copies are not illegal, as inferred by the allegation.

There is nothing unusual about the engineer finally approving a TC without visiting the field except on a few occasions. The TC was initiated in the

field by a qualified engineer who provided the field solution to a construction problem. That solution was submitted to onsite Engineering for approval. Approval was not to verify that the proposed solution would actually fit in the field, but to verify that the solution met design, safety, and licensing criteria. Final approval of design would be accomplished at the time of as-built evaluation which incorporates all TCs.

The copy of QF-2-9876, about which the alleger complains, is included in the work support package. It is marked "Replacement" and stamped "Approved For Construction," and is a part of a work request issued for valve and flange work on FCV-409 while 921-40 Rev. 6 was the effective design drawing. This tolerance clarification, along with Rev. 6, constituted the latest approved design drawing prior to final as-builting. Approval of the work based upon the then-current design, as reflected on the tolerance clarification, is not an "illegal quick fix."

With regard to revision 6, the QC acceptance referred to in the allegation indicated that the work done to satisfy revision 6 was performed according to quality standards. The acceptance by QA was an acceptance of the documentation. The note "accepted by QA pending resolution of reject comments" referenced in the allegation merely indicates that QA has completed a review of the package, and the need for additional information, clarification, or correction has been identified. This conditional acceptance obviates the need for a 100% reinspection at such time as the additional requirements are met. This practice is consistent with ESD 254 which requires

that, during in process QA review of documentation, on discovery of any deficient document condition, QA meet with Pullman Engineering and/or QC to resolve the problem. However, final verification that reject comments have been resolved is performed by QA prior to final acceptance of the support package and the filing of such in the QA vault.

While such comments are not currently with the support package, there is no procedural requirement that interim QA comments or questions be permanently retained as part of plant documentation. Such comments would be retained with the package as part of a hold file and would be required to be satisfied prior to QA final acceptance and the filing of the support package in the vault. If the comments were missing from the hold file, the complete documentation package would be reviewed. Consequently, review for acceptance in all cases is complete and no falsification of documentation exists, as is claimed by the allegation. Contrary to the allegation, there have been no QA reviewers fired for refusing to stamp "Accept" on a deficient document package.

The allegation also claims that it is strange that revision 6 has again been revised and is now called DC Rev. 0. This later revision is the designation of a design change under a new system and involves nothing unusual. Contrary to the allegation, TCs were not used to initiate design on this support. The work area of support 921-49 is congested and several minor adjustments were necessary to allow construction. These adjustments were accomplished by TCs. Design Change DC Rev. 0 was issued by Engineering on determination that anchor bolt sizes would be required to be increased. The design change and the TCs were consistent with existing procedure.

NRC Allegation #1221

Allegation Description:

Pullman repeatedly has requested inspectors to write-up suspected deficient conditions not explicitly defined by procedure, on memorandum.

NRC Allegation Paraphrase:

Pullman management repeatedly has requested inspectors to write-up suspected deficient conditions not explicitly defined by procedure on memoranda, rather than through Deficient Condition Notices (DCN's). This prevents QA/QC violations from being entered at all into the formal reporting system.

Pullman's procedure ESD 268 specifically defines what a "deficient condition" is, and outlines the procedure for documenting/reporting situations meeting the definition. If an inspector is unsure whether a discovered condition is a "deficient condition," he has been directed to report the situation to management, either orally or in a written memorandum, requesting further direction on whether to issue a DCN. If the decision is that the discovered condition is a deficient condition, then a DCN is issued. If it is decided that the condition is not a deficient condition, then it need not be a part of the formal reporting system.

NRC Allegation #1223

Allegation Description:

When specification violations are identified Pullman's solution is to change the specification rather than correct the violation.

NRC Allegation Paraphrase:

I also am concerned how problems are being dispositioned when reports are issued. To illustrate why, I have noticed a consistent practice when packages are rejected for reocurring violation of specifications: change the specification rather than correct the violation. This practice has occurred so often that I do not have confidence in the individual decisions. The potential problems have been exacerbated further, since Engineering puts related pending packages with discepancies on hold until the rules are changed and the work is then accepted.

The alleger implies that once specifications are written they can never be changed. This is not the case. PGandE and Pullman have the right to change specifications and procedures so long as the change is properly approved and meets PGandE's licensing commitments. However, specifications are not changed simply to avoid correcting violations.

Specifications are revised regularly for various reasons, such as Discrepancy Report dispositions, clarifications, new design criteria, different inspection requirements, change in PGandE specifications, etc. All revisions are implemented only after they are reviewed and approved by appropriate Pullman Power Products and PGandE personnel.

NRC Allegation #1225

Allegation Description:

QC inspector was requested to re-construct records for stanchions on safety-related lines.

NRC Allegation Paraphrase:

I am concerned that management may be directing inspectors to perform work in a manner that could result in falsified material traceability records. The practice occurred for stanchions on safety related lines. Contrary to requirements, we did not have warehouse traceability records. QA management instructed me to go into the field and just copy onto the records the heat and Purchase Order (PO) numbers from the hardware to reconstruct the warehouse requisition. That is improper; the traceability records are supposed to be based on records from the manufacturer. It is false to fill them out from the field with the notation "reconstructed," and there is no procedure detailing reconstruction requirements. The documentation is supposed to be reflect the accuracy of field traceability markings and without warehouse records the material is indetermimate.

This allegation is misleading. Stanchion material is released to the field using warehouse requisitions. The requisition eventually forms part of the documentation package for the piping system. In those cases where the requisition is lost prior to final review and acceptance of the package, QC inspectors can physically verify the markings on the stanchion. This verification is used to reconstruct the original requisition. The requisition is plainly marked as "reconstructed" so there will be no confusion should the original requisition be discovered. In either case, the record for traceability is accurate.

Reconstruction of misplaced warehouse requisitions is based on ESD 254, paragraph 2.2, and is in accordance with ANSI N45.2.9, paragraph 3.2.6, 1974.

NRC Allegation #1241

Allegation Description:

PGandE's answer concerning the preinspect procedures is misleading because the program was controlled through numerous uncontrolled memos many of which contradicted each other.

NRC Allegation Paraphrase:

In response #1 to these allegations (April 30 letter, p. 1), PGandE claimed, "Procedures covering the reinspection of such work were in place at all times." That answer is misleading at best, because it infers that the procedures actually covered and controlled all the work in the preinspect program. In fact, the program in practice was "controlled" through numerous uncontrolled memorandas, many of which contradicted each other. These memoranda provided the informal, inconsistent controls for how to conduct the inspections we supposedly weren't doing.

The subject matter of this allegation was initially addressed in response to GAP #174 and #295 submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

The alleger erroneously implies that the PGandE preinspect program was a quality assurance program. It was not. Rather, it was an efficiency program whereby design changes for specific individual hangers were reviewed for physical interferences prior to the assignment of craft personnel to accomplish new work. The need for the program was recognized when construction activities were being delayed and interfered with upon the discovery by craftsmen that proposed changes could not be installed on existing hangers or supports without additional design modifications. Equipment had to be moved, the Project had to be contacted for direction, and work had to be rescheduled and directed to another area which also might have

the same problem. As a result, the preinspect program was initiated to determine the existence of interferences or the ability to construct before crafts were assigned. This program was directed by several memoranda which did not have control numbers.

The quality functions that were performed were incidental to the primary purpose of preinspect, namely a determination of new design constructability, and the quality inspections were performed in accordance with existing written procedures. For example, welds on pipe supports were inspected to the criteria of Pullman Procedure ESD 223, "Installation and Inspection of Pipe Supports." Under such criteria, which were different from those in effect at the time of original installations, discrepant conditions were identified and documented in DR 4678 (Unit 1) and DR 4730 (Unit 2). These conditions were reviewed by Engineering and, after analysis, were determined to be acceptable for their design and safety purposes.

There may have been occurrences when memoranda defining this program to increase efficiency appeared to conflict. However, such is not surprising since the preinspect program was in a formative and evolutionary stage and changes could be expected.

GAP #174 and #295, Petition at 5 and 40, respectively.

It is alleged that:

A February 21, 1984 PG&E memorandum institutionalized the above violation by stripping Pullman QC inspectors of the organizational freedom to apply corrective action for weld symbol deficiencies on previously accepted work. That authority was reserved for PG&E construction department preinspection field engineers. (citing 2/26/84 Anon. Aff. at 11.)

Until February 15, 1984, PG&E preinspection field engineers did not have the organizational freedom to look at any work already accepted, regardless of deficiencies. To illustrate, they were instructed not to look at any existing welds already accepted by Pullman. One current engineer explained what they had to ignore: "The paperwork was so sloppy, however, that I could not tell when a weld had been accepted, or under what revision of the installation procedure, or under what acceptance criteria." (citing 2/27/84 Anon. Aff. at 6.)

1. The above two allegations relate to a February 15, 1984 memorandum (there was no February 21 memorandum) signed by D. A. Rockwell, which reallocated responsibilities relating to, among other things, the examination of previously accepted work in conjunction with the implementation of design changes. Procedures covering the reinspection of such work were in place at all times.

2. When a pipe support design modification is received, a pre-inspection is performed to determine the constructibility of the change. Prior to February 15, 1984, each pre-inspection activity was performed by a pre-inspection field engineer and a QC inspector. The primary assignment of the pre-inspection field engineer was to check the constructibility of the design modification, i.e., could it be installed

as shown and where shown, and to recommend solutions if construction problems existed. He could also note the differences between the drawing and the existing installation. To perform the constructibility review, the pre-inspection field engineer was issued only the latest revision of the hanger drawing. The pre-inspection engineer was not responsible for conducting final quality control inspections of previously accepted work, and pre-inspection was not used as a substitute for the required QC inspections.

3. Prior to rework or modification, the QC inspector was assigned to inspect all existing welds on the supports to be modified against the revised design drawing and to identify any discrepancies between the existing welds and/or symbols and ESD-223 acceptance criteria.

4. After all work was completed and the new as-built drawings prepared, the QC inspector inspected the newly modified support to ensure that it complied with acceptance criteria and the new as-built drawing. After acceptance by QC, the as-built drawing was transmitted to PGandE Project Engineering for final review and acceptance of the as-built design.

5. The pre-inspection program and associated responsibilities were revised by the February 15, 1984 memorandum to more efficiently utilize available manpower without adversely impacting plant quality. The revised program eliminated QC participation in the pre-inspection process and clarified all pre-inspection responsibilities of the

pre-inspection field engineer, including the "red-lining" of existing welds and/or symbols which may not have been accurately depicted on the revised design drawing.

6. The QC inspection, including review of all new work, all rework, and all items "red-lined" by the pre-inspection field engineer, now takes place in a single step after the completion of the modification. All of the necessary design and quality functions continue to be performed, including transmittal of as-built drawings to Project Engineering for review and acceptance.

7. Documentation and traceability of inspection records for supports that have had modifications are the responsibility of Pullman's QA/QC Department. The pre-inspection field engineer is neither required nor expected to track through these documents during the normal course of his work, nor is there any reason for him to do so. That a specific engineer could not follow the necessary paperwork in an area for which he did not have responsibility is of little consequence as long as the documentation is acceptable and understandable to those who do have the responsibility. A history for any given hanger is maintained in either the Pullman QA vault or the PGandE QC vault.

NRC Allegations #1242, 1408, and 1459

Allegation #1242 Description:

PGandE stated that QC was assigned to inspect existing welds, this statement is false by omission. The pre-inspection group had responsibility for this action.

NRC Allegation Paraphrase:

In response #3 to the same allegations, PGandE says prior to rework modification the QC inspector was assigned to inspect all existing welds on the relevant supports and identify any discrepancies. That statement is false by omission. It does not reflect the common practice on site and the verbal management policy that preinspect was to perform those functions. QC inspectors may have performed some of the evaluations, but that's a small part of the whole story.

Allegation #1408 Description:

QC inspectors restricted from identifying discrepancies in "old work."

NRC Allegation Paraphrase:

In an April 30, 1984 letter to the Nuclear Regulatory Commission (NRC), DCL 84-166, (April 30 letter), PGandE responded to GAP allegations #174 and #295 preinspection replacing QC, and restrictions on reporting problems with "old work". PGandE stated that the preinspect program was not used to substitute for quality control inspections. (April 30 letter, pp. 1-2). In my experience, that is a false statement. I was a preinspect engineer and page one of our preinspect manual effective August 15, 1983 stated that we would perform "evaluation of existing welds" and make determinations whether deviations should be noted on as-built drawings or instead reworked. There was no QC person with us when we performed these QC functions. QC inspectors told me that they had been instructed not to look at existing "old" work. As a result, we were the only functioning QC program left officially recognized or not for most of the "old" work done at the plant. The safety effect is that some of the worst work at Diablo Canyon, the old work, has been effectively removed from the official QA/QC program and turned over to a program that PGandE now says was not responsible for quality.

Allegation #1459 Description:

PGandE transferred the authority of existing weld program from QA/QC to untrained field engineers.

The subject matter of these allegations was previously addressed in response to GAP #174, #180, #181, #182, and #295 submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

1. PGandE's responses are not "false by omission." As stated in its previous response, preinspection was initially performed by both a preinspection field engineer and a QC inspector. The field engineer checked "constructability" of a proposed design modification, and the QC inspector was assigned to inspect all existing welds on the supports to be modified. Together, these two individuals comprised a preinspection group.

2. The preinspect program was subsequently modified in two steps to remove the QC review of existing welds at the time of preinspection and to limit QC inspection to new work on the pipe support or hanger. This change was made for two reasons. The weld conditions identified in DRs 4678 and 4730 were determined to be acceptable after Engineering study and review. Second, the QC activity of reinspecting existing welds negated the increase of efficiency that the preinspect program was intended to bring about. In short, early identification of construction

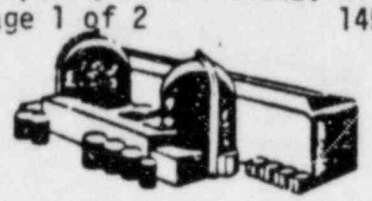
interferences was delayed by reinspection of existing welds to different criteria from those in effect at the time of installation.

The scope of the Unit 2 preinspect program was modified by a memorandum dated August 12, 1983 (Attachment A) to transfer QC review of old welds to the time of final inspection. The scope of both the Unit 1 and Unit 2 programs were changed by the February 15, 1984 memorandum (Attachment B) to eliminate all QC review of existing welds after the Engineering study which determined the weld conditions to be acceptable.

The evaluation conducted by the preinspection engineer subsequent to modifications of the program scope continued to be primarily an engineering evaluation of acceptability for proposed design purpose and not a QC inspection, as alleged. As for existing welds that were inspected, the preinspection engineer's determination was whether they should be accepted for their design purpose or whether they were unacceptable and therefore should be reworked. The deletion of the QC inspection during preinspection, about which the alleger complains, did not remove the "old work" from a QA/QC program. Those welds were originally performed under a QA/QC program. The QC inspection of workmanship of all items red-lined and all rework now takes place after completion of the modification to an existing hanger. Discrepancies in weld size for existing work would have already received initial engineering evaluation for acceptability.

This subject is also further discussed in response to NRC Allegation #1324.

Diablo Canyon Project



PACIFIC GAS AND ELECTRIC COMPANY
BECHTEL POWER CORPORATION

To P. Stieger/H. Karner/S. Cornish Date August 12, 1983

From E. J. Macias/J. Arnold/G. Thomas

Of General Construction Subject Unit 2 Pipe Support Preinspections

At Jobsite Extension #3504

Effective 8-15-83 the following changes shall be implemented to stream-line the Unit #2 pipe support preinspection program:

1) Evaluation of existing welds on previously accepted pipe supports will be performed during the PTGC pipe support preinspection stage by Engineering personnel. Engineering will either as-build existing weld configurations or direct that the existing welds be reworked to conform to the tolerances specified by ESD-223.

2) The pipe support fabrication request (PSFR) and material requisitions will be filled out during the PTGC pipe support preinspection stage. The Pullman lay out crew will fill out PSFR's and material requisitions for those supports that are laid out during the PTGC hanger preinspection. Supports that do not require lay-out during preinspection will have PSFR's completed by PTGC Engineering personnel. The PTGC Engineer will enclose the completed PSFR and material requisitions with the released hanger package when it is transmitted to Pullman's hanger office. The Pullman hanger office will enter the drawing into the drawing control system per the memo from J. Arnold/G. Thomas to P. Stieger/H. Karner dated 5-16-83. All Pullman Engineering and QC reviews should then be performed in the Pullman hanger office. This will include the addition of all necessary process sheets, check-lists and approval of the material requisitions. The QC Inspector shall initiate any required ASWR and complete any required documentation. Any field questions or any additional information required from the field shall be referred to the preinspection engineer for resolution. Additional preinspections by Pullman Field Engineers and QC Inspectors will not be performed.

The pipe support package, including the PSFR and/or material requisitions, shall be sent to the Pullman material storage area for fabrication and statused to "Foreman" in the CPSS. "FE-1" will no longer be needed to status these drawings in the CPSS

3) At PTGC's request, Pullman Engineering personnel will perform the preinspection functions outlined in 1 and 2 above.

Contact Mr. Gene Thomas at Ext. 3504 if there are any questions.

A. Murphy (for)
E. J. Macias
Area Superintendent
Unit 2

J. Arnold
Resident Mech. Engineer
Unit 2

G. Thomas
Lead Pipe and Hanger Engineer
Unit 2

cc: A. Murphy
J. Wells
P. Werts
D. Johnson
D. Rockwell

Rec'd by P. Stiger
8-12-83

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON PROJECT • GENERAL CONSTRUCTION
P O BOX 117 • AVILA BEACH CALIFORNIA 93424 • (805) 595-232

February 15, 1984

Pullman Power Products
P.O. Box 367
Avila Beach, CA. 93424

ATTENTION: Paul Stieger

Diablo Canyon Project
Specification 8711
Pipe Support Modifications

Dear Mr. Stieger:

The following shall be implemented immediately.

For Pipe Support modifications to part (but not all) of an existing Support, Pullman QC and Field Engineering shall inspect the existing portions to the following criteria:

I. Supports having unmodified portions with a latest QC Acceptance prior to 10/1/82.

The unmodified portions of these supports is defined as "existing work". Inspection of this existing work shall be as specified below and as stated elsewhere in ESD 223 (for example, sections 5.4.4.2, 5.4.4.3 and 6.4.1.1 E).

1. Pre-Inspection:

QC shall not perform any field inspection of existing work during Pre-Inspection. The Pullman Power Products or PTGC Field Engineer shall pre-inspect as follows:

a) Non-welding workmanship items (i.e., loose nuts, incorrect gaps, etc.) and existing welds having obvious defects/discontinuities exceeding ESD 223 requirements shall be reworked as directed in the pre-inspect package by the field engineer. (Authorization on the process sheet by PTGC is not required.)

b) Existing welds which are undersize shall be as-built/redlined by the field engineer or reworked as determined by the field engineer in accordance with tolerances specified in ESD 223. (Rework does not require authorization by PTGC on the process sheet.)

c) Weld symbols for existing welds shall be red-lined by the field engineer for conformance to AWS A 2.4 and ESD 223. No PSDTC is required.

2. Workmanship Inspection:

a) Field Engineering.

Verify that 1 a, b and c (above) were satisfied for existing work on supports that were pre-inspected prior to 10/1/83.

For supports pre-inspected on or after 10/1/83, it is not necessary to inspect the existing welds again.

b) QC.

Inspect the following:

-General, non-welding workmanship (loose nuts, etc.)

-Existing welds that were reworked (Ref: 1a, above).

-Verify that the weld sizes and/or symbols of existing welds that were red-lined (Ref: 1b and c, above) are correct.

3. Redlining/As-Built/FE2:

Field engineering shall insure that the configuration is as-built in accordance with ESD 223.

4. Quality Control - Q2:

Pullman Quality Control shall perform a final review of the as-built drawing and configurations for compliance with as-building tolerances as specified in ESD 223.

II. <u>Supports having unmodified portions with a latest QC Acceptance on or after 10/1/82.</u>

The unmodified portions of these supports do not require re-inspection by QC or Engineering. This applies to all sections of ESD 223 addressing existing work.

These changes supercede the 4/11/83 memo (copy attached). DR's 4678 and 4730 are no longer required to document discrepancies on existing welds.

D.A. Rockwell
Project Field Engineeer

Attachments: Yes

Reply Requested: No

JA Originator: GT/PAW/jmu

cc: J. Macias
A. Murphy
J. Wells
R. Tinkle
J. VanKlompenburg
S. Cornish (Pullman)
A. Kulikowski
C. Dougherty
R. Meredith
E. Johnston
P. Werts
H. Karner (Pullman)
G. Thomas

DCC 11691

GAP #174 and #295, Petition at 5 and 40, respectively.

It is alleged that:

A February 21, 1984 PG&E memorandum institutionalized the above violation by stripping Pullman QC inspectors of the organizational freedom to apply corrective action for weld symbol deficiencies on previously accepted work. That authority was reserved for PG&E construction department preinspection field engineers. (citing 2/26/84 Anon. Aff. at 11.)

Until February 15, 1984, PG&E preinspection field engineers did not have the organizational freedom to look at any work already accepted, regardless of deficiencies. To illustrate, they were instructed not to look at any existing welds already accepted by Pullman. One current engineer explained what they had to ignore: "The paperwork was so sloppy, however, that I could not tell when a weld had been accepted, or under what revision of the installation procedure, or under what acceptance criteria." (citing 2/27/84 Anon. Aff. at 6.)

1. The above two allegations relate to a February 15, 1984 memorandum (there was no February 21 memorandum) signed by D. A. Rockwell, which reallocated responsibilities relating to, among other things, the examination of previously accepted work in conjunction with the implementation of design changes. Procedures covering the reinspection of such work were in place at all times.

2. When a pipe support design modification is received, a pre-inspection is performed to determine the constructibility of the change. Prior to February 15, 1984, each pre-inspection activity was performed by a pre-inspection field engineer and a QC inspector. The primary assignment of the pre-inspection field engineer was to check the constructibility of the design modification, i.e., could it be installed

as shown and where shown, and to recommend solutions if construction problems existed. He could also note the differences between the drawing and the existing installation. To perform the constructibility review, the pre-inspection field engineer was issued only the latest revision of the hanger drawing. The pre-inspection engineer was not responsible for conducting final quality control inspections of previously accepted work, and pre-inspection was not used as a substitute for the required QC inspections.

3. Prior to rework or modification, the QC inspector was assigned to inspect all existing welds on the supports to be modified against the revised design drawing and to identify any discrepancies between the existing welds and/or symbols and ESD-223 acceptance criteria.

4. After all work was completed and the new as-built drawings prepared, the QC inspector inspected the newly modified support to ensure that it complied with acceptance criteria and the new as-built drawing. After acceptance by QC, the as-built drawing was transmitted to PGandE Project Engineering for final review and acceptance of the as-built design.

5. The pre-inspection program and associated responsibilities were revised by the February 15, 1984 memorandum to more efficiently utilize available manpower without adversely impacting plant quality. The revised program eliminated QC participation in the pre-inspection process and clarified all pre-inspection responsibilities of the

pre-inspection field engineer, including the "red-lining" of existing welds and/or symbols which may not have been accurately depicted on the revised design drawing.

6. The QC inspection, including review of all new work, all rework, and all items "red-lined" by the pre-inspection field engineer, now takes place in a single step after the completion of the modification. All of the necessary design and quality functions continue to be performed, including transmittal of as-built drawings to Project Engineering for review and acceptance.

7. Documentation and traceability of inspection records for supports that have had modifications are the responsibility of Pullman's QA/QC Department. The pre-inspection field engineer is neither required nor expected to track through these documents during the normal course of his work, nor is there any reason for him to do so. That a specific engineer could not follow the necessary paperwork in an area for which he did not have responsibility is of little consequence as long as the documentation is acceptable and understandable to those who do have the responsibility. A history for any given hanger is maintained in either the Pullman QA vault or the PGandE QC vault.

GAP #180, 181, and 182, Petition at 6-7.

It is alleged that:

On December 28, 1983, Pullman modified installation procedure ESD-223 -- which also provides the acceptance criteria for QC inspectors -- by adding the following provision: "D. For existing installations, welding which was performed but was not required as part of the design is acceptable . . ." (citing ESD-223, "Installation and Inspection of Pipe Supports, "at I, V and 46.) This practice can create unaccounted residual stress on the corresponding pipe support. (citing 2/27/84 Anon. Aff. at 4.)

On Decembe. 28, 1983, Pullman also amended ESD-223 with the following provision: "E. For existing installations, welding which was not performed but was required as part of the design is acceptable." (citing ESD-223 at I, V, and 46.) This waiver suggests that faulty welds also would be acceptble (sic), since they could be sacrificed entirely. In other words, anything that does (or does not) exist is acceptable. This procedure revision suggests that quality assurance standards are not just deteriorating; they have collapsed. ESD-223 governs safety-related pipe hangers throughout the plant.

Both amendments were made with the full knowledge of PG&E, pursuant to a December 9, 1983 meeting between Pullman and PG&E. (citing ESD-223 at 11.) The excuse offered for accepting these deviations from design was that through "as-built" drawings, further engineering analysis could determine whether the original design requirements were necessary. (citing ESD-223 at 46.) The excuse cannot wash. Valid QC inspection criteria are one mandatory step among many required for a minimum quality assurance program. They should not be sacrificed because of another independently-required safeguard. Second, the as-built reviews themselves are of questionable reliability. (citing GAP 3/1/84 Petition at 19, Item 216.)

8. These three allegations arise out of a misunderstanding of a December 1983 revision to Pullman procedure ESD-223. The revision resulted from a series of minor variations in welds that had been discovered during pre-inspection of existing pipe supports prior to their release for modifications which were required by the Corrective Action Program.

Undersized fillet welds, incomplete fillet welds, and minor weld defects were observed on existing pipe supports. PGandE Engineering reviewed the effect of such variations on the safety of existing supports and, consistent with design and licensing requirements, provided disposition for the existing welds referenced in the Minor Variation Reports.

9. Contrary to the implication of the allegations, the quality review of existing welds was not sacrificed by the procedural change but remained a requirement of the program. In its approval of the proposed procedure, PGandE specifically required that:

> "1. Undersize, oversize, or incomplete fillet welds shall be as-built, provided that weld quality meets the requirements of ESD-223, paragraph 6.8.2.4 B, C, and D." (Emphasis added).

Paragraph 6.8.2.4 B requires that:

> "B. The final surface of all welds shall be substantially free of sharp surface irregularities, excess surface slag, slag inclusions, and shall have a good workmanship appearance. Excessive surface irregularities may be removed by chipping or grinding provided the weld size specified on the support is maintained."

10. Contrary to GAP #181, the quality assurance program remains in effect for all welds. As discussed in the response to GAP #174 and 295, the February 15, 1984 revision to the pre-inspection program does not eliminate weld quality inspection, but merely shifts the time of inspection of existing welds from pre-inspection to after installation of the modification. At such time, all new and existing welds that

have been "red-lined" by the pre-inspection engineer or reworked are subject to quality control inspection for acceptability according to the same criteria.

11. In GAP #180 and 181, reference to the as-built process as part of the existing weld review program has been conveniently omitted by the alleger. Where welding which was not required by the existing design drawing has been performed on existing supports, or where required welding was not performed, the field engineer identifies the items for rework or indicates such discrepancies on the as-built drawings to ensure that each pre-existing discrepancy will be individually evaluated and accepted. After completion of the construction, QC confirms the accuracy of the as-built drawing by inspecting the completed support against the drawing.

12. All as-built drawings are transmitted to Project Engineering for review. Engineering reviews the as-builts and verifies compatibility with existing calculations or performs new calculations, as required. If compliance to design criteria is not demonstrated by calculation, appropriate corrective action, including the issuance of a modified support design or rewelding, is taken. Therefore, the design/construction process continues to ensure that the as-built configuration is accurately depicted on drawings, qualified by calculation, and acceptable. This entire process is controlled by procedure and documented.

NRC Allegation #1243

Allegation Description:

PGandE made a false statement when they stated that it wasn't the field engineer's reponsibility to track previous documentation for existing work. It was.

NRC Allegation Paraphrase:

In response #7 to these allegations, PGand E said it wasn't the field engineer's responsibility to track the previous documentation for existing work is a false statement as well. In verbal instructions and informal memoranda, we were told to attach the copies of previously-accepted work to our drawings and provide "ASWR" dates where applicable.

This allegation relates to a prior PGandE response to GAP #174 and #295 in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

This allegation appears to result from the alleger's confusion with PGandE's intended meaning of the term "tracking." While field engineers were instructed to attach previously accepted work and to provide certain information with their drawings, collection and maintenance of documentation was never the responsibility of field engineers but rather that of the QA Department. The direction that certain documentation accompany drawings was an efficiency measure to ensure rapid and comprehensive review of the field engineers' drawings.

GAP #174 and #295, Petition at 5 and 40, respectively.

It is alleged that:

A February 21, 1984 PG&E memorandum institutionalized the above violation by stripping Pullman QC inspectors of the organizational freedom to apply corrective action for weld symbol deficiencies on previously accepted work. That authority was reserved for PG&E construction department preinspection field engineers. (citing 2/26/84 Anon. Aff. at 11.)

Until February 15, 1984, PG&E preinspection field engineers did not have the organizational freedom to look at any work already accepted, regardless of deficiencies. To illustrate, they were instructed not to look at any existing welds already accepted by Pullman. One current engineer explained what they had to ignore: "The paperwork was so sloppy, however, that I could not tell when a weld had been accepted, or under what revision of the installation procedure, or under what acceptance criteria." (citing 2/27/84 Anon. Aff. at 6.)

1. The above two allegations relate to a February 15, 1984 memorandum (there was no February 21 memorandum) signed by D. A. Rockwell, which reallocated responsibilities relating to, among other things, the examination of previously accepted work in conjunction with the implementation of design changes. Procedures covering the reinspection of such work were in place at all times.

2. When a pipe support design modification is received, a pre-inspection is performed to determine the constructibility of the change. Prior to February 15, 1984, each pre-inspection activity was performed by a pre-inspection field engineer and a QC inspector. The primary assignment of the pre-inspection field engineer was to check the constructibility of the design modification, i.e., could it be installed

as shown and where shown, and to recommend solutions if construction problems existed. He could also note the differences between the drawing and the existing installation. To perform the constructibility review, the pre-inspection field engineer was issued only the latest revision of the hanger drawing. The pre-inspection engineer was not responsible for conducting final quality control inspections of previously accepted work, and pre-inspection was not used as a substitute for the required QC inspections.

3. Prior to rework or modification, the QC inspector was assigned to inspect all existing welds on the supports to be modified against the revised design drawing and to identify any discrepancies between the existing welds and/or symbols and ESD-223 acceptance criteria.

4. After all work was completed and the new as-built drawings prepared, the QC inspector inspected the newly modified support to ensure that it complied with acceptance criteria and the new as-built drawing. After acceptance by QC, the as-built drawing was transmitted to PGandE Project Engineering for final review and acceptance of the as-built design.

5. The pre-inspection program and associated responsibilities were revised by the February 15, 1984 memorandum to more efficiently utilize available manpower without adversely impacting plant quality. The revised program eliminated QC participation in the pre-inspection process and clarified all pre-inspection responsibilities of the

pre-inspection field engineer, including the "red-lining" of existing welds and/or symbols which may not have been accurately depicted on the revised design drawing.

6. The QC inspection, including review of all new work, all rework, and all items "red-lined" by the pre-inspection field engineer, now takes place in a single step after the completion of the modification. All of the necessary design and quality functions continue to be performed, including transmittal of as-built drawings to Project Engineering for review and acceptance.

7. Documentation and traceability of inspection records for supports that have had modifications are the responsibility of Pullman's QA/QC Department. The pre-inspection field engineer is neither required nor expected to track through these documents during the normal course of his work, nor is there any reason for him to do so. That a specific engineer could not follow the necessary paperwork in an area for which he did not have responsibility is of little consequence as long as the documentation is acceptable and understandable to those who do have the responsibility. A history for any given hanger is maintained in either the Pullman QA vault or the PGandE QC vault.

NRC Allegation #1245

Allegation Description:

PGandE's response to GAP allegation #275 on the lack of a uniform system of weld symbols is a false statement by omission. The alleger was instructed not to use AWS A2.4

NRC Allegation Paraphrase:

In response to allegation 235 on the lack of a uniform system of weld symbols, PGandE said that the allegation "approaches technical absurdity"; because American Welding Society (AWS) symbols are used throughout the United States, including Diablo Canyon. (Id., pp. 66-7). It's the practice at Diablo Canyon that was absurd. This statement is misleading and false by omission. In practice we were instructed not to use AWS. When I asked on-site to use AWS 2.4 symbols as a guide, management told me they didn't apply.

This subject was previously addressed in response to Allegation III-30 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegation and response are attached hereto.

PGandE is unaware of any instructions to personnel not to use AWS A2.4 symbols. Without additional corroborating details from the alleger, PGandE can only assess his statement as being untrue.

III-30

It is alleged that:

1. "If any misinterpretation concerning weld symbols occurred, steps were taken to prevent reoccurrence by conducting meetings with personnel or by clarifying procedures."

Response: P G & E's response to this particular concern is only partially true. In fact, Pullman has issued various revisions to ESD #223 (one of the relevant construction engineering documents in this instance), yet failed to reference American Welding Society Standard (AWS) A2.4 as being the standard for weld symbol interpretation. The significance of this is that the procedures still do not reference a governing, controlled document that establishes universal interpretation of welding symbols throughout the plant. This ambiguity can allow welding that does not meet the original design intent to be performed in the plant on Seismic Category I structures. Without a standard to use, it is impossible to have a quality assurance program to verify the "Design" to "Installation" criteria is [sic] properly applied.

I further take exception with the position that extensive steps have been taken by management through meetings to clear up the confusion. To my knowledge, as of March 16, 1984 meetings to discuss the weld program deficiencies have not been held with the field pre-inspect engineers responsible for implementing any changes in established practices. I know this, for I personally would have been in attendance. I found this response puzzling, and questioned my lead, John Rhodes, as to P G & E's commitment to AWS A2.4. His response was that we were not committed to AWS but were committed to whatever management told us to do. See attachment 7, interoffice memorandum 034318. This document states that not until October 15, 1983 did they require strict compliance with AWS A 2.4. (Undated Anon. Aff., Attachment 5, at 1-2).

The following allegations relate to PGandE's letter to the NRC Region V, DCL-84-040, dated February 7, 1984, which, as requested by the NRC, provided an overview of the weld symbols issues.

This letter included examples of some problems, and an

explanation of how those were accommodated. The letter pointed out that welding symbols are a part of a communication process. Welding symbols were addressed in PGandE letter DCL-84-166 to the NRC, dated April 30, 1984. The overview on welding symbols from the letter is repeated here.

WELDING OVERVIEW

WELD SYMBOLS

The following twenty-two allegations are based on weld symbols: 171, 173, 174, 234 through 246, 248, 249, 252, 253, 254, and 263. These allegations represent 16% of the allegations in GAP II. The allegations come from only two sources: first, Mr. Stokes, and these were previously addressed; and second, GAP II anonymous affidavit attachments, which have not been made available. The allegations all fail for either a lack of substance, lack of context, technical errors, false or misleading statements, or a combination of these reasons. The subject of weld symbols was discussed with the NRC and documented in PGandE's letter DCL-84-040, dated February 7, 1984. It is recommended that the February 7th letter be reviewed to assist in understanding the response.

This overview is provided to keep the significance of the allegations in perspective. The total program with regard to weld symbols has worked effectively from design calculations to as-built structures.

American Welding Society symbols for welding have been used at Diablo Canyon since its inception. Symbol usage has been incorporated into the project by numerous references to contract specifications and other documents. AWS symbols have been used as the common basis for communication within the United States welding industry, regardless of the fabrication code specified or product constructed. As stated in AWS A2.4, the intent of symbols is to facilitate

communication. The AWS symbols have been used by common consent even where not specifically referenced, just as the English language has been used at Diablo Canyon. Symbols may have occasionally been used imperfectly, but the required meaning was conveyed and understood, and the use of any non-standard symbols has not resulted in unacceptable welds. The parallel between weld symbols and the written and spoken language exists in that grammatically imperfect language can effectively convey meaning and requirements.

Engineering and inspection personnel have acquired knowledge of welding symbols through their experience, education, training, and use of references. Pullman has included questions regarding weld symbols in the QC inspectors' qualifications tests since 1974, and has included AWS A2.4 in the reading list for QC inspectors. Welding symbols are not difficult to master. In fact, approximately six symbols account for almost all field welds.

Due to the rapid expansion of the Diablo Canyon plant staff, specific training programs were conducted regarding AWS A2.4 weld symbols. Three hundred and fifty engineers and QC inspectors were trained during May, June, and July of 1983. Additional pre-certification training was conducted for the AWS Certified Welding Inspectors Program in June-July and November-December, 1983.

PGandE letter DCL-84-040 provided an overview of the weld symbols issue. Examples of symbol concerns and unclear symbols were intentionally included. Notations were made on example drawings contained in DCL-84-040 to show how the Project addressed the specific concern, and how the Project compensated for lack of specific or clear weld size information.

Previous correspondence was included with DCL-84-040 showing examples of how some imprecise weld symbols on previously issued drawings were to be interpreted. Additional correspondence displaying examples of preferred symbols, labeled DO, and non-preferred symbols, labeled DON'T, were also included. The DOs and DON'Ts were identified as applicable to new drawings.

In a few cases, specific narrow scope exceptions to the standard symbols have been documented. These

documented exceptions to A2.4 symbols use are permissible and correct in the context of the Diablo Canyon Project.

Weld symbols are not used in a vacuum but are part of a program of communication between design engineering and construction in the field. There have been, and will continue to be, additional verbal and documented communications between engineering and construction clarifying design requirements. These communications are a necessary and proper method to assure that the welds required by the design are installed in the plant.

As has been explained, the AWS welding symbols have been used at Diablo Canyon since its inception. These symbols are the common basis for communication within the United States welding industry. The fact that Pullman did not reference the A2.4 document in ESD 223 is of no consequence because the use of these symbols and their interpretation is inherent. Contrary to the allegation, this did not result in an ambiguity. Because the AWS welding symbols are commonly available in references, this complaint has no merit.

The assertion that the Project was not in compliance with AWS symbols until October 15, 1984, is also false. The alleger's Attachment 7 was included in PGandE letter DCL-84-40. This subject is also addressed in III-33G and III-37, below.

NRC Allegation #1246

Allegation Description:

PGandE states that 350 persons were trained on weld symbols. This statement is false by omission. It fails to point out that we were being trained to Bechtel criteria not to AWS.

NRC Allegation Paraphrase:

PGandE added that 350 personnel were trained from May-July 1983 in weld symbols. That statement is misleading, because it implies that this in any way solved the problem. Those 350 trainees represented a small proportion of those who had to translate the weld symbols on drawings, before, after and during the training program, and many of those were "body shoppers" in PGandE's language, and are not on the site.

The weld symbols training program is a standard Bechtel corporate program with an established text, figures, and handout training aids. All of these demonstrate general consistency with AWS welding symbols. Copies of the program were provided to the NRC Staff onsite during the last 2 weeks of May 1984.

The assertion that training 350 persons represented only a small portion of those involved in weld symbols was previously addressed in response to Mr. Stokes' representation that 7,000 personnel were involved. (See attached response to JIR 20 submitted in PGandE letter DCL-84-239 dated June 26, 1984.) Contrary to the allegation, the 350 personnel represent a significant portion of those at Diablo Canyon who had a need to understand welding symbols.

JIR-20

It is alleged that:

In PG&E letter No. DCL-83-166 on page 48 in the last paragraph, PG&E states "Due to the rapid expansion of the Diablo Canyon plant staff, specific training programs were conducted regarding AWS A2.4 weld symbols. Three hundred and fifty (350) engineers and QC inspectors were trained during May, June, and July of 1983. Additional pre-certification training was conducted for the AWS Certified Welding Inspectors Program in June-July and November-December, 1983." (Emphasis added.). [sic]

When you read PG&E's responses to valid problems such as this, their answers are humorous.

Maybe 350 people sounds like a lot. Let me put the number in perspective. How does 350 compare to 7000 relevant employees at the site? Mathematically the ratio is 1 in 20. When you consider that 350 were typically in management, the number left in the field to spread the knowledge around brings the ratio to more like 1 in 50.

[illegible or deleted] As of March 1983, according to PG&E Unit 1 modifications were complete. What good does it do to train the help after the job is finished? (6/1/84 Stokes Aff. at 5-6.)

In response to Stokes' rebuttal, as has been previously stated in response to previous allegations, there was weld symbol training:

> The allegation is ... false regarding lack of training. Weld symbol training was conducted for 350 personnel during May, June and July, 1983. This program was implemented to ensure that all personnel were using the same system and were aware of the symbols in use. In addition, pre-certification Certified Welding Inspector Training Courses were given to engineers and inspectors at the Diablo Canyon site in June-July, 1983, and November-December, 1983.
>
> Those individuals involved with welding at Diablo Canyon are assumed to have an adequate working knowledge of weld symbols due to previous education,

> experience and/or training and weld symbols are commonly available in reference documents. Because of the previous knowledge of all personnel involved in welding and related engineering and QA/QC activities, and the ready availability of applicable information, there is adequate confidence that the as-built drawings transmitted to Project Engineering both prior to and after February 15, 1984 are accurate."
> (DCL-83-166, pp. 79-80)

Mr. Stokes again brings up this point by once again distorting the issues with invalid comparisons. There were not 7,000 "relevant" employees on site as alleged. Stokes is absurdly counting sweepers, typists, maintenance personnel, guards, carpenters, pile drivers, etc., as "affected" by weld symbols knowledge. The 350 personnel trained represent engineers and inspectors involved in activities directly related to welding symbols, and are a large, significant percentage of "relevant" personnel. For example, at the time that there were 7,000 employees, there were a total of 818 engineers and 461 QA/QC inspectors. Obviously, not all engineers and inspectors work with welding. It must be recalled that knowledge of weld symbols has also been developed by previous education, experience, and/or training, and that the weld symbols are a commonly available reference.

This training was conducted because use of a common language for communication was deemed to be of some importance. The benefits, if any, will be realized in Unit 2 construction and Unit 1 maintenance. Another potential benefit of this training was to assist in looking for significant errors in Unit 1, if such errors existed, and no such errors were found.

NRC Allegation #1247

Allegation Description:

PGandE made a false statement concerning weld symbols. The alleger states that he can identify cases that are so inadequate that the same symbol contradicts between piping and civil welds.

NRC Allegation Paraphrase:

PGandE assured the NRC that historically the weld symbols have "been adequate to assure implementation of design requirements". (Id.) That statement is false at the most fundamental level. I can identify cases where the symbols are so inadequate that the same symbol contradicts between piping and civil welds. You can't get much more inadequate than that.

The alleger does not identify the symbol in question. However, the allegation appears similar to previous allegations regarding pipe supports and HVAC supports, which were addressed in response to Allegation III-33G submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegation and response are attached hereto. In addition, the use and interpretation of weld symbols was thoroughly discussed in PGandE letter DCL-84-040 dated February 7, 1984, a copy of which is attached, and in response to Allegation III-30, a copy of which follows Allegation #1245 above.

As discussed in response to III-33G, there was an occasion when a single weld symbol had a different meaning to two groups. On such occasions, if similar symbols are misunderstood or not understood by others, then, as outlined in PGandE letter DCL-84-040, procedures are available to resolve the confusion, as follows:

1. Refer to OPEG for design clarification.

2. Return to OPEG for design revision.

3. Return to Engineering for design revision.

4. Review jointly by Engineering and Construction for revision of field installation instructions.

III-33G

It is alleged that:

At this point I would like to emphasize the last line of Attachment 4 "All pipe support as-builts issued by General Construction after October 15, 1983 should have all weld symbols in conformance with AWS A2.4," and Attachment 7, last paragraph "Welding symbols in strict compliance to standard of AWS A2.4," and Attachment 9 under Responses Item 1 where a contradiction to AWS A2.4 is expanded on as the correct use. It appears to me that the use of AWS A2.4 is not consistent by management. They only use AWS A2.4 when they want to, where they want to, and how they want to, but not as AWS A2.4 states it is to be used. (Undated Anon. Aff., Attachment 5, at 6.)

This appears to be another misrepresenation of facts and presentation out of context. The alleger's Attachment 7, dated October 10, 1983, addressed pipe supports and emphasized the need to comply with AWS. Attachment 4, dated October 25, 1983, reconfirmed that pipe support weld symbols would comply with AWS A2.4. The alleger's Attachment 9 relates to HVAC work by different personnel, not to pipe supports. In this case, the kinds of weld joints and material thicknesses used in HVAC installations are different from pipe supports or structural steel. A minor problem was recognized with HVAC symbols and the Project addressed the problem, clearly identifying the symbol convention being used. This was a correct and appropriate Project action.

It should be noted that all three of the alleger's attachments were also attached to PGandE's letter DCL-84-040, dated February 7, 1984, to the NRC. This allegation does not represent any new information, or have any technical or safety significance.

PACIFIC GAS AND ELECTRIC COMPANY

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J. O. SCHUYLER
VICE PRESIDENT
NUCLEAR POWER GENERATION

February 7, 1984

PGandE Letter No.: DCL-84-40

Mr. John B. Martin, Regional Administrator
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

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

Dear Mr. Martin:

At the audit exit interview on January 19, 1984 at Diablo Canyon, the NRC Staff requested additional information on the welding program as a result of its investigations into the allegations listed in SSER 21. The questions centered on the use and interpretation of weld symbols in design and construction.

PGandE's response to the Staff questions is enclosed.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

J. O. Schuyler

Enclosure

cc: T. W. Bishop
D. G. Eisenhut
G. W. Knighton
H. E. Schierling

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ENCLOSURE

WELDING PROGRAM

I. BACKGROUND

At the audit exit interview on January 19, 1984, the NRC requested additional information regarding the use of weld symbols and the Diablo Canyon Welding Program. Specifically, PGandE was requested to:

A. Discuss the significance of weld symbols to proper design and installation.

B. Describe field inspections performed to address inconsistencies in interpretation of weld symbols.

C. Describe actions taken to ensure proper interpretation of weld symbols.

D. Provide specific attachments requested by NRC inspectors which support the welding symbol program.

II. RESPONSE

This report summarizes the weld design and installation program at Diablo Canyon. The report clarifies the means by which Engineering and Construction implemented welding activities and describes how problems were identified and corrected through a process of multiple reviews.

It must be recognized that no single element of the program stands alone. If any misinterpretation concerning weld symbols occurred, steps were taken to prevent reoccurrence by conducting meetings with personnel or by clarifying procedures. Also, potential weld requirement misinterpretations were accounted for in the design process. The Diablo Canyon program is typical for the industry, and PGandE has made a firm commitment to continue to improve the communication between Engineering and Construction regarding weld design.

A. Overview

The weld symbols used at Diablo Canyon are consistent with the standards specified in AWS D1.1, Section 2.4. For configurations that are somewhat difficult to symbolize, it is understandable that construction personnel might need periodic clarification of these symbols. This is particularly true when modifications are performed on a plant that is already constructed, such as Diablo Canyon. In view of this fact, welding symbols were used as only one means of conveying weld requirements. To date, no situation has been identified in which misinterpretation of weld symbols has resulted in the installation of unacceptable welds. Consequently, there is no safety significance to this issue.

B. Program Elements

The Diablo Canyon Welding Program consists of the following:

1. Regular communication between engineering and construction personnel on weld design and intent.

2. Discussions between design engineers and construction personnel to clarify any special problems with interpreting weld symbols.

3. Provision for substantial reserve margins in weld design.

4. Verification of design calculation without reliance on welds made to ambiguous specifications in design calculations.

C. Verification Program

Weld installation reviews performed early in the design verification program (1981) consisted of reviewing all available as-built information and performing plant walkdowns to obtain additional information. These reviews were performed to ensure that design information was sufficient and accurate. Welding matters were included in all these reviews. The extent of field walkdowns, preparation of as-builts, and conservatisms associated with weld design are described below. With regard to conservatisms, weld sizes are usually governed by code requirements and not by strength considerations. Welding codes specify minimum weld sizes to ensure that adequate fusion with the base metal is achieved. When welded components are subjected to an analytical evaluation, the weld stresses are almost always low. This is especially true with Electrical Raceway and HVAC supports.

1. Pipe Supports

Designers, using as-built drawings, did not take credit for welds in design calculations if the weld configuration was not clearly shown or if interpretation of weld symbols was not consistently made. For example, square groove welds, seal welds, and partial penetration welds on lug attachments were not included in design calculations. (Attachment 1 contains four illustrative examples.) This was done to ensure conservative design and to minimize the frequency of reverification of welds. When calculations, using these conservative assumptions, indicated exceedance of acceptance criteria, the Onsite Project Engineering Group (OPEG) provided additional information. (Ten illustrative examples are provided in Attachment 2.) Information supplied on weld symbols was supplemented by sketches of affected areas.

2. Conduit Supports

Designers were provided with as-built drawings based on field walkdowns. Welds are typically simple 3/16" fillet welds and designers seldom take credit for the weld throat produced by the small radii of struts.

3. HVAC Supports

As-builts for all supports were prepared by OPEG and reviewed by Project Engineering. For this area of review, the fraction shown on partial penetration weld symbols was always considered to be the effective throat dimension and all designs are qualified based on this interpretation (See discussion of DCN minor revision to DC2-EC-12928, Attachment 4).

4. Structural Steel

Designers reviewed as-built drawings and field conditions. Structural steel welds are simple and symbols for the desired welds are quite clear. Very little verification of weld requirements conveyed by weld symbols was required.

5. Equipment Mounting

Designers reviewed installation as-built drawings. Welds were properly specified and interpreted which resulted in few requests for clarification.

6. Rupture Restraint

A sample of welds was field verified by nondestructive examination and their adequacy confirmed by calculation.

D. Communication of Information

Communication on weld design and weld symbol use has taken several forms, including discussion sessions and written direction. With respect to the first method of communication, Engineering and Construction have conducted meetings to discuss welds, and this program will continue to assure proper communication of weld symbol use and weld design (Attachment 3). These sessions are comprehensive and widespread in that they are conducted with design engineers, field engineers, inspectors, and contractor personnel.

The design information pertinent to welding and weld symbols provided by Engineering to Construction is supplemented by a significant amount of other types of communication. For example, correspondence is transmitted between Construction and Engineering on a regular basis. A representative sampling of correspondence is provided in Attachment 4 to illustrate that questions regarding welding are thoroughly discussed and resolved. This information is used by both Engineering and Construction to revise existing procedures and instructions and to standardize and clarify the intent of welding requirements. This process serves to ensure that the design intent is communicated to Construction and that construction implementation is communicated to Engineering. Design Engineering also sends engineers to the field in response to any questions which arise. Engineers are present when construction work is in progress to ensure that the designer's intent is provided to Construction and to resolve any possible installation difficulties. Attachment 5 contains a representative sampling of Engineering clarification provided in the field.

The process involved in communicating and implementing the designer's intent has led to many discussions. Items requiring interpretation are identified and handled in the same general manner. Identification of most points requiring interpretation occur during pre-field construction reviews, preparation of erection drawings, assembly of work traveler packages, and during construction but prior to QC acceptance. Items requiring interpretation are resolved by:

1. Referral to OPEG for design clarification.

2. Return to OPEG for design revision.

3. Return to Engineering for design revision.

4. Review jointly by Engineering and Construction for revision of field installation instructions.

In addition, during the QC review, or after final acceptance, the process identified above may be supplemented by issuance of a discrepancy report with Engineering input for resolution, or by issuance of a discrepancy report with the Project Team General Construction (PTGC) welding engineer input for resolution.

Weld symbol uses which require repeated clarification are referred to Engineering for generic clarification by way of a letter from the Project Engineer. The following section illustrates a number of weld symbols used that are typical of those which were clarified by Engineering. See Attachment 6 for figures of weld symbols which correspond to the items listed below.

1. Single flare bevel symbol

   No specified T_e noted on drawing implies T_e by design to be per AWS D1.1 with maximum T_e =5/16R. Any greater T_e required by design will be stated explicity.

2. Flare bevel

   See symbol 1 above.

3. Staggered fillet weld

   The arrow-side symbol is to be the same size as noted for other-side symbol. Design intent is that both side symbols are to be dimensioned per AWS.

4. Single bevel groove weld

   Bevel and included angle are the same. The angle is to be in accordance with either the pre-qualified or specially qualified procedure. Any deviation outside of code essential variables, if so noted, is to be reviewed by the engineer. The included angle need not be noted unless the design engineer has a specific requirement.

5. Square groove butt weld

Future design use will specify both T_e required and the root opening if weld has structural value. This symbol will be used in the future to denote a "seal weld" if the weld is not structural. This information will be noted in the tail of the weld symbol.

6. See symbol 5 above.

7. Fillet weld on two sides; both fillet weld sizes assumed same

Field to verify. In the future, both sides will be sized.

8. Single bevel groove weld with fillet cap

Interpretation and assumption require design engineer clarification or construction as-builting. In the future, both partial penetration weld and fillet weld are to be sized.

9. Fillet weld on two sides

Intent is for fillet weld on right and left sides of shape. In the future, the weld deposit plus the length of required weld will be indicated for both sides. Also, the wrap around requirement will be stated (See Attachment 4).

10. Fillet weld for size-on-size tubular steel

Size-on-size tubular steel (same size structural tubing welded together); one weld symbol as shown is not sufficient. A fillet weld is required for two sides and a flare groove type weld is required for the other two sides.

11. Fillet weld on 3 sides

Intent is for a flare bevel not fillet. See symbol 1 above.

12. Fillet weld on 3 sides

Symbol acceptable as shown. No need to specify "3 sides."

13. Site engineer Directive DCC 10263 and SFHO DCC 8039, Chron. 037390 (see also Attachment 4) specified wrapping of corner when possible and, in all cases, the weld size and length are to be noted on the as-built drawing.

14. Fillet weld on 3 sides

In the future, only the arrow-side will be shown, and only three sides are to be welded (see symbol 12 above.)

15. For engineering Directive, see DCC 7688 and DCC 7524 in Attachment 4 for explanation of joint design requirements, measurement, and weld symbol.

III. SUMMARY

Weld symbol interpretation has generally been consistent with AWS D1.1, Section 2.4; however, some deviations have occurred. These deviations generally occur with ambiguous symbols causing inconsistent interpretation or requiring clarification. Generally, the construction forces have interpreted these symbols by installing the stronger joint. The designers have interpreted them conservatively by reducing the assumed strength of the joint.

The process of constructing and as-building these welds has resulted in the clarification and correction of the inconsistencies. Numerous field checks and engineering reviews have shown that acceptable welds are installed. To date, no case of unacceptable welds resulting from misinterpretation of symbols has been identified. Therefore, there is no safety significance in this issue.

NRC Allegation #1248

Allegation Description:

Due to the intense pressure at the site there wasn't any time to look up the weld symbols in reference documents. The inspectors had to guess when they found an unfamiliar symbol.

NRC Allegation Paraphrase:

Due to the intense production pressure, we only had 4.5 hours to complete our preinspect work on each hanger or risk discipline. There wasn't time to find and look up the weld symbols. That is why engineers at Diablo Canyon had to guess when they didn't know the weld symbol. That also is why it is false to say that reference documents could "be referred to in the course of an individuals's work ." (Id.)

This subject was previously addressed, for the most part, in response to GAP #237 and #294 submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

In general, the weld symbols used on drawings are the standard AWS weld symbols. Pullman inspectors use AWS A2.4 as a study guide and have weld symbols included on their certification tests. Any weld symbols used onsite that do not agree with AWS standards are clarified in applicable ESDs (such as ESD 223). All inspectors have, and have had, access to weld symbol reference documents, especially the AWS Standard Welding Symbols sheet. These sheets were easily obtained from the Training Officer and most QC inspectors had copies. Symbols on drawings that deviated from this sheet were clarified in the ESD, which took precedence over the Welding Symbol Sheet. The ESDs were readily available to all QC inspectors and engineers.

For the alleger to state that there wasn't time to look up weld symbols because of the threat of discipline if preinspect work was not completed in a certain time frame, is a ridiculous and false statement. In the first place, as pointed out in the prior response, the vast majority of all field welds associated with pipe supports and rupture restraints are covered by only about six basic weld symbols, which are commonly and readily available in reference documents. Second, there was no requirement that hangers must be preinspected in four and one-half hours or any other fixed number of hours. Thus, there was no need for engineers to "guess" when they did not know the weld symbol.

GAP #237, Petition at 25.

It is alleged that:

Field engineering personnel are consistently untrained and are not consistently knowledgeable about weld symbols. This problem extends to the supervisory level. Overall, one pre-inspection engineer concluded, "From personal observation and discussions, I would estimate that 75-80% could not pass a surprise test on weld symbols." (citing 2/27/84 Anon. Aff. at 2-3.)

124. Although it is impossible to accurately determine the specific details of this allegation since the cited anonymous affidavit has not been made available, it appears to be essentially the same issue as is addressed in PGandE response dated March 6, 1984, to Joint Intervenors' Motion to Reopen on DQA, Breismeister, et al., Aff. at 54.

125. The allegation is misleading in the implication that weld symbols need to be memorized. Field engineering personnel are not required to memorize weld symbols, and this is not necessary for them to adequately perform their job. In fact, the vast majority of all field welds associated with pipe supports and rupture restraints are covered by about six basic weld symbols. The symbols are commonly available in reference documents which can be referred to in the course of an individual's work. Specific uncertainties regarding interpretation of weld symbols are easily resolved by using these ready references. Specific training in weld symbols was conducted for over 350 personnel during the periods of May 10-12, 1983, and June 20-July 1, 1983. The allegation is also false regarding untrained personnel.

GAP #294, Petition at 40.

It is alleged that:

Management schedule pressure deprives preinspection engineers of adequate time to find and correct problems on the hangers. While the minimum time needed to properly inspect and document a hanger is 9-12 hours, they only had 4.5 hours per hanger. Complex hangers with significant deficiencies could take 30-35 hours. These time limits were enforced by verbal threats from the lead to let go any engineers who could not maintain that pace. (citing 2/27/84 Anon. Aff. at 17.)

74. The purpose of the pre-inspection program is to verify that a component can be constructed in accordance with the "design" drawings and to identify differences between the drawings and the existing configuration. The QC responsibilities are separate from the pre-inspection program and are assigned to the QC inspectors in accordance with the approved ESDs.

75. The specific issue raised by the allegation was addressed in an internal PGandE memo to Mr. Paul Werts from Mr. Jim Phillips and Mr. E. Henton, dated February 15, 1984. This memo was responded to by Mr. Werts on March 6, 1984. The job duties and responsibilities of the pre-inspection engineer were also discussed in an interoffice memo (IOM) from Mr. Werts to Mr. Jim Bratton of PGandE QC dated March 21, 1984.

76. The allegation that the minimum time needed to inspect and document a hanger is 9 to 12 hours is not correct. However, the time is subject to wide variation. Based on prior industry experience, a 4.5 hour pre-inspection time per hanger was considered to be attainable. However, at Diablo Canyon, 8 to 9 hours has proven to be the average time required to perform this function. It is recognized that complex hangers can take well in excess of even this longer time frame. The weekly hanger production report shows the number of hours actually required to pre-inspect hangers. This report is used as a management tool for staffing requirements and hours to be worked per week for pre-inspection engineers to meet schedule requirements.

77. No individual has been disciplined for not pre-inspecting hangers in 4.5 hours (or, for that matter, 8 to 9 hours) as alleged. The leadman, Mr. Werts, has no recollection of any threats, implicit or explicit, made to any individuals in the group. Statements were made to the group that individuals who could constantly perform this function in an acceptable manner in less than the average time would be so recognized in their performance reviews. However, inasmuch as pre-inspection is not a QC function, ability to perform the work faster would not have any potential adverse impact on construction quality, because the existing work had previously been inspected and accepted by QC inspectors and all new or reworked items must subsequently be reviewed and accepted by QC.

NRC Allegation #1249

Allegation Description:

PGandE made the false statement that reference documents were commonly available as ready references. Research materials were not readily available.

NRC Allegation Paraphrase:

PGandE's response also was false to say that "reference documents" were "commonly available" as "ready references" so that uncertainties could be "easily resolved." The simple truth is that research materials were not readily available. It took a determined effort to obtain such authorities on-site. As seen above, engineers did not have time for such efforts.

The allegation basically involves the meaning of the terms "commonly available" or "readily available." A well-stocked library of codes, standards, and specifications is maintained at the site by PGandE to supplement the reference materials available from contractors, including Pullman. Access to this information is readily or commonly available to anyone who needs it within the generally accepted definition of those terms.

PGandE does not believe it is necessary to furnish individual copies of research materials to each engineer or inspector who may desire them.

NRC Allegation #1250

Allegation Description:

PGandE statement is misleading that the vast majority of pipe support/rupture restraint work is covered by six symbols. There are hundreds of variations of welding symbols

NRC Allegation Paraphrase:

PGandE's statement is misleading that the vast majority of pipe support/rupture restraint work is covered by six basic symbols. The implication is that there wasn't much to keep track of anyway. In fact, there were hundreds of variations of possible welding symbols. We were responsible to verify that the specific weld identified in the drawing existed in the field, not that the same "basic" weld was there. If we were only responsible for six weld symbols they could have been memorized by nearly anyone at the job.

This subject was previously addressed in response to GAP #237 submitted in PGandE letter DCL-84-166 dated June 29, 1984. A copy of the previous allegation and response are attached hereto.

The following symbol descriptions are those most commonly used and of concern to inspectors and designers of pipe supports and rupture restraints: fillet weld, bevel groove weld, vee groove weld, flare vee weld, and flare bevel weld. These are used to show welding on either or both sides of a joint, and with dimensions to indicate the size of fillet welds and the size of partial penetration welds. These are easily memorized by almost everyone, and almost everyone understands that the specific implementing weld edge preparation details are shown on engineering approved details, generally on the welding procedure specification or, sometimes, on engineering drawings.

The hundreds of variations are achieved by addressing weld edge preparation details which are not a concern for verifying that specific welds exist and generally not a concern for designing. Verification of welds simply requires verifying: (1) full penetration welds when both sides are accessible; (2) fillet weld size; (3) that flare joints are filled; and (4) that partial penetration weld grooves have been filled.

EAP #237, Petition at 25.

It is alleged that:

Field engineering personnel are consistently untrained and are not consistently knowledgeable about weld symbols. This problem extends to the supervisory level. Overall, one pre-inspection engineer concluded, "From personal observation and discussions, I would estimate that 75-80% could not pass a surprise test on weld symbols." (citing 7/27/84 Anon. Aff. at 2-3.)

124. Although it is impossible to accurately determine the specific details of this allegation since the cited anonymous affidavit has not been made available, it appears to be essentially the same issue as is addressed in PG&E response dated March 6, 1984, to Joint Intervenors' Motion to Reopen on DQA, Breismeister, et al., Aff. at 54.

125. The allegation is misleading in the implication that weld symbols need to be memorized. Field engineering personnel are not required to memorize weld symbols, and this is not necessary for them to adequately perform their job. In fact, the vast majority of all field welds associated with pipe supports and rupture restraints are covered by about six basic weld symbols. The symbols are commonly available in reference documents which can be referred to in the course of an individual's work. Specific uncertainties regarding interpretation of weld symbols are easily resolved by using these ready references. Specific training in weld symbols was conducted for over 350 personnel during the periods of May 10-12, 1983, and June 20-July 1, 1983. The allegation is also false regarding untrained personnel.

NRC Allegation #1257

Allegation Description:

PGandE response letter to GAP allegation #143 that relevant supervisors are not aware of orders to stop working on weld symbol problems is false. I was ordered to stop working on this.

NRC Allegation Paraphrase:

In response to GAP allegation 243, including orders to stop working on weld symbol problems, PGandE responded that the relevant supervisors "are not aware of any such orders being given." (Id.,p.31). That is a false statement. I have provided detailed information to the NRC's Office of Investigations (OI) on who specifically ordered me to stop work on weld symbols and the circumstances.

In response to GAP Allegation #243 submitted in PGandE letter DCL-84-187 dated May 17, 1984, the alleger was identified as Jim Phillips and his immediate supervisor as Paul Wertz. In that letter, PGandE reaffirmed its earlier response that Mr. Phillips was not ordered to stop work on weld symbol problems. PGandE has again discussed the matter with Mr. Wertz and maintains its earlier position. However, PGandE's investigation has determined that Mr. Phillips did receive instructions which could have led him to believe, if he so chose, that he was ordered not to work on weld symbol problems.

When Mr. Phillips first identified his weld symbol concerns, the matter was referred to Design Engineering for resolution. Mr. Phillips desired to work on the resolution of the weld symbol concerns. However, he was told by Mr. Wertz that there were other individuals who would address the resolution of the weld symbol concerns and that resolution of those concerns was not his responsibility. Mr. Phillips may well have misinterpreted the instruction to

stop work on resolution of the weld symbol concerns as an across-the-board instruction to have nothing whatsoever to do with weld symbols when, in fact, he was only told to stop work on resolution of the concerns. Nevertheless, his accusations are without merit.

NRC Allegation #1265

Allegation Description:

PGandE claim that reinspections are performed when incomplete weld descriptions are identified is false. I identified many cases of gross deficiencies and no corrective action was taken.

NRC Allegation Paraphrase:

In further response PGandE claimed that reanalyses or reinspections were performed when incomplete weld descriptions were identified. PGandE did not offer any qualifiers on this reassurance. The response is false. I know from personal experience of numerous cases where management refused to take corrective action after I brought gross examples of deficient drawings to their attention.

Without additional details, PGandE is unable to identify any of the alleged "numerous cases" where management refused to take corrective action after being shown deficient drawings. In the event that an incomplete or incorrect weld symbol or description is identified by Project Team General Construction (PTGC) engineers or the contractor, the appropriate steps are taken to provide clear direction to the contractor. PTGC engineers investigate such deficiencies and discuss their findings with Project Engineering. Upon resolution, the appropriate documentation is issued via a document which is reviewed and approved by Project Engineering. Items which involve a change in design require Project Engineering approval. For matters which are only an interpretation or a clarification, General Construction may grant the necessary approval.

NRC Allegation #1275

Allegation Description:

Both the NRC Staff and PGandE's theories may be inaccurate about how P&IDs and OVID's are used. Unit 2 hydrostatic test packages have been issued with OVID's instead of PandID's and they were inaccurate.

NRC Allegation Paraphrase:

PGandE's response was a non-response to GAP allegations 298-300, that piping design drawings (PandIDs) and operator drawings (OVIDs) are incomplete, inaccurate and contradict each other, and that management's verbal policy was for field engineers to ignore problems with OVIDs. PGandE answered by describing the theoretical system for these two drawing systems. That was not responsive to my point, the implementation of the system. PGandE did not respond to any of the problems in the allegations; the plant cannot operate unless operator drawings are accurate, and unless engineers are free to identify and resolve inaccuracies that could later hinder the operators during emergency conditions.

At a 1984 meeting with me the NRC staff was more responsive. Unfortunately, they didn't dig far enough to find the problems that still exist. In a patronizing manner the NRC explained the difference to me between the two drawings. They added that Unit I conflicts between them had long been resolved in a routine fashion, as OVID's were updated to reflect the changes incorporated into PandID's. That pat answer sounds reassuring. Unfortunately, it is not accurate. On December 10 and 11, 1983, after fuel was loaded, the Unit I OVIDs and PandIDs still were in conflict in safety related systems. The OVIDs still did not show changes that had been incorporated into the PandID's and the isometric drawings used in the field. Examples are enclosed as Exhibits 1 and 2.

The significance of this problem is that it left the operators in the dark. They may still be in dark. The above reports represent the type of assignments that management ordered me to stop writing. (Exhibit 3).

The problem extends beyond failing to update the OVIDs. It permeates the system of controls for accuracy of drawings. Even the PandIDs have not consistently been updated in a timely fashion. They are supposed to be revised to reflect design changes including those that can occur when QC

reports such as Deficient Condition Notices (DCN's) are dispositioned. I know from experience that they weren't. That could be highly significant, since inspectors have informed me that DCN's frequently have been closed-out through changing the design by, in effect, waiving previous design requirements. Those sacrifieces may not be reflected on even the PandIDs, let alone the OVIDs.

I also recently have learned that both the NRC staff and PGandE's theories may be inaccurate about how PandIDs and OVIDs are used at Diablo Canyon. Unit II some hydrostatic test packages have been issued with OVIDs instead of PandIDs. The staff conceded that the OVIDs for Unit II are not yet accurate, but said the OVIDs would be updated to match the PandIDs before the OVIDs are needed. That presumes that OVIDs do not have to be ready until the operators use them to run the plant. But since in Unit II they have been used for hydrostatic tests, the inaccuracies could be highly significant. If the same mistake occurred and inaccurate OVIDs were used for hydrostatic tests in Unit I, an unknown number of test results could be disqualified. I know the practices in Unit II from personal experience in my new job with _____ I cannot confirm whether the practice has occurred in Unit I as well, because I was not yet been permitted to see those packages. But there is no reason to think it was different. I hope that the Unit I packages will receive the same code compliance review as Unit II.

Contrary to the allegation, implementation of the systems for ensuring that the Piping and Instrument Schematics (P&Is) and the Operational Valve Identification Diagrams (OVIDs) are accurate and up to date have been, and continue to be, successful.

OVIDs are used by PGandE Nuclear Plant Operations (NPO) for system line ups and for reference for clearing equipment which will ensure safe and accurate operation of the plant. Unlike P&Is, OVIDs are not detailed drawings but are diagrams of particular lines with valve identification numbers contained therein.

Pursuant to NPO procedures, a modification to a particular line is referred to the Supervisor of the OVIDs to determine whether it is necessary to change the OVID. If an OVID is changed, the change is performed immediately, with a turnaround time of no more than 2 days from receipt of the change until distribution of the new OVID to all who need the OVID. In the interim, notification of the pending change in the OVID is immediately delivered to specific groups, such as the control room, to alert them to the pending revision of the OVID. In cases where the OVID Supervisor determines that the modification need not be immediately included in the OVID, a yearly walkdown is performed to identify all additions to the system for inclusion in the OVID. To date, all Unit 1 OVIDs are current and 95% of all Unit 2 OVIDs are completed.

P&Is, on the other hand, are the responsibility of the Engineering Department. P&Is are prepared and updated per Engineering Procedures 3.60N, 3.6CN, and 3.7.

For Unit 1, Engineering Procedure 3.60N requires updating for all P&Is to be completed within 30 days of the date Engineering receives the completed design change. As yet, this 30-day requirement is not applicable for Unit 2 since it does not have an operating license.

Contrary to the allegation, all Design Change Notices (DCNs) that affect a P&I, are reflected on it. It is true that there may be a lag between the time that the completed DCN is received and when it is actually incorporated into

the P&I. But in the interim, the existence of the DCN is recorded at drawing control center at the site so that anyone using the P&I has the most current information available for use.

Due to the discretionary nature of changes to be included in OVIDs and the time lag in the updating of P&Is, as long as there are modifications being done to the plant there will undoubtedly be a certain amount of inconsistencies between OVIDs and P&Is. However, the inconsistencies are of no consequence since NPO procedures assure that operators have the most current OVIDS and engineering procedures assure that Engineering and Construction have access to the most current P&Is and changes.

Finally, the allegation is concerned with the possibility of the use of out-of-date OVIDs for the performance of hydrostatic tests. While there may well be Unit 2 hydrostatic test packages that have been issued with OVIDs rather than P&Is, or with out-of-date P&Is, the concern is without merit. For all hydrostatic tests performed or to be performed on Units 1 and 2, a pre-test walkdown is performed on each line to determine the actual configuration of the line to be tested. As a result, all tests are performed using the actual configurations of the line rather than relying on the drawings, whether OVIDs or P&Is, thereby assuring the accuracy of the test results.

GAP #298, 299, and 300, Petition at 42.

It is alleged that:

Inaccurate drawings mean that operators may rely on information which conflicts with the approved design. The Nuclear Plant Operators (sic) (NPO) department uses drawings known as Operational Valve Identification Diagram (OVID) to run and assess the condition of the plant. A whistleblower reports, however, that these drawings do not match the approved design drawings, known as Piping and Instrumentation Diagrams (sic) (P and ID) (sic). For example, "the flow sequence was so far off that the two versions of drawings had valves on different sides of the check valves. This discrepancy could lead to false readings for the operators about the flow of liquid in the system." (citing 2/27/84 Anon. Aff. at 14.)

In some cases, the OVIDs that will be relied on by operators are incomplete. The missing information includes such significant data as valve numbers, which are used to obtain line clearance angles required for plant equipment status. (citing 2/27/84 Anon. Aff. at 15.)

PG&E management's verbal 1983 policy was that field engineers should ignore all problems with OVIDs. (citing 2/27/84 Anon. Aff. at 15.) As a result, management made an intentional decision for plant operations to rely on incomplete and/or inaccurate information.

183. At Diablo Canyon, like other power plants, the design engineering organization provides a series of diagrams, called Piping and Instrument Schematics (P&Is), which include schematic piping layouts for each plant system. The P&Is schematically show the various system components and piping, identify the major components, and provide miscellaneous design information, such as line sizes and applicable piping codes.

184 Although P&Is contain much useful information for the operators, they are not tailored specifically toward operational needs. In general, the P&I- do not assign unique valve numbers to any manual valves. Also,

instruments, vents, drains, and piping interconnections are shown in a very schematic manner on the P&Is, and not in their exact physical layout.

185. As a result of the above considerations, the plant operations staff has prepared Operational Valve Identification Diagrams (OVIDs). The principle purpose of this effort was to assign a unique identification number to every valve in the plant, thereby assuring that operating procedures were unambiguous in their references to valves. Also, while the OVIDs are laid out in the same manner as the P&Is, with a one-to-one correspondence between the two types of diagrams, the OVIDs were "cleaned up" (in relation to the P&Is) by removing extraneous design information and showing additional detail where it would enhance operator effectiveness.

186. The OVIDs are prepared and maintained by the plant operations staff in accordance with approved administrative procedures (see Administrative Procedure E-9 and Supplement 1 to Administrative Procedure E-9). These procedures provide for initial and periodic review of OVIDs to assure their accuracy, incorporation of design changes, and approval and signoff.

187. In summary, OVIDs are considered as descriptive appendices to the plant operating procedures, are specifically designed to be used by operators for system line-ups and for reference in clearing equipment, and are carefully controlled to assure accuracy. They contain more operational information, not, as alleged, less than do the P&Is.

188. The OVIDs, unlike the P&Is, are maintained by the Operations Department instead of the Engineering Department. This, of course, explains any instructions to personnel in other departments that they were not responsible for updating OVIDs.

GAP #286, Petition at 37.

It is alleged that:

At the time of Mr. Stokes' departure, plant operators did not have access to a centralized document center with all information necessary to respond to conditions in the plant. This could compromise operators' ability to make all decisions from the control room in an emergency. (citing January 25 transcript at 115-16.)

189. This allegation is simply false and beyond the area of expertise and knowledge of the alleger. Plant operators have, for many years, had access to accurate, up-to-date information necessary to operate the plant. This includes access to central files, records management computer terminals, and hard copies in the control room for high-use documents. Similarly, the Technical Support Center and Emergency Operations Facility are provided with appropriate documents for use during emergencies.

NRC Allegation #1276

Allegation Description:

In Unit 2 hydrostatic test packages I reviewed, over 60% contain unacceptable errors. These errors violate ANSI B31.7. These errors may be in Unit 1 also.

NRC Allegation Paraphrase:

My new job involves reviewing Unit II hydrostatic test packages. On over 60% of the packages, I have found unacceptable errors. These errors violate ANSI B31.7 and could result in failure of the tests. The errors include overpressurizing, erroneous control variables and underpressurizing. Underpressurizing was the predominant error. In most cases, the mistake was to extend low pressure limitations that should apply to small portions of a line due to the sensitive nature of certain components and equipment. Normally these items are isolated and the rest of the line is tested at the full pressure. But at Unit II, the restrictions were applied to the whole line.

The underpressurizing averaged around 10%. There were many cases that were 200-300% below the required test pressure and some that were over 1000% too low. The significance of the errors is that the design margins were not tested to see if they truly can withstand the pressures for which the design takes credit. This means that to a significant extent, the claimed margins of safety are still just theories. That's not acceptable.

Time has prevented me from reviewing Unit I for the same errors in the hydrostatic test program. That makes me concerned that the same type of errors may exist there as well. If so, the plant should not operate commercially until the design limits have been verified. The hot functional and low power tests do not serve that purpose. Generic deficiencies in the hydrostatic test results raise similar concerns about reported results from the other two testing programs.

The requirements for leak testing of completed systems are included in Pullman Procedure ESD 229. This procedure has been written to comply with ANSI Code B31.7. The hydrostatic tests are reviewed by Engineering, QA, and the

Authorized Nuclear Inspector (ANI) to assure compliance with the approved procedures.

The allegation states that a large number of errors have occurred, especially underpressurization, during the hydrostatic tests for Unit 2. The allegation is not correct. ANSI Code B31.7 requires that each system be hydrostatically tested to a pressure equal to the design pressure of that system multiplied by a factor. System design pressure is defined by ANSI B31.7 as the maximum normal operating pressure of the piping system. The preliminary review of the hydrostatic tests results, which was the background for this allegation, used an enveloping design pressure based on piping classification as the basis for the required hydrostatic test pressure, instead of the system-specific design operating pressure required by the code. (Piping classifications are assigned to piping systems based on a variety of criteria including function, material requirements, pipe size and thickness, and expected operating conditions.) The alleger has compared the enveloping hydro pressure against the actual pressure used for the tests and reached an erroneous conclusion that the tests were not conducted at an adequate pressure level. The actual code requirements for such tests are based on the system-specific parameters (i.e., expected operating conditions), not the arbitrary enveloping values. In virtually all cases, the actual hydro test pressure which was used met or exceeded the code requirement even when the tests were not conducted at the initially designated enveloping test pressure. For those cases where the code requirements were not met, a retest has been or will be performed. The need to use a pressure less than the enveloping test pressure was usually the

result of the existance of a limiting component within the system. The existance of limiting components and the treatment thereof is addressed in the code and the methodology used at Diablo Canyon is in compliance with these guidelines.

Overpressurization is not a problem because in no case was the code requirement for maximum hydro pressure exceeded. In a few cases, piping and/or components were inadvertently pressurized above their individual limits. All such overpressurized components were subsequently reviewed by Engineering and/or the vendor and found acceptable or were repaired.

The alleger's reference to erroneous control variables is unclear and lacks sufficient details to enable PGandE to respond further.

The hydrostatic tests for Unit 2 piping systems are currently undergoing an in-depth review by Engineering, QA, and the ANI to assure compliance with the approved procedures prior to turnover to PGandE. Any code unacceptable conditions identified during this review will be resolved to ensure compliance prior to system turnover.

The Unit 1 piping systems hydrostatic tests were conducted in a similar manner and in accordance with approved procedures. These tests received the required QA and ANI review and were accepted. Any identified violations of the approved procedures were resolved prior to turnover of the documentation to PGandE.

The allegation also implies that hydro tests are a method of testing design safety margin. This is false. Hydrostatic tests are a code requirement to demonstrate system pressure integrity, not to verify or establish design safety margin.

A similar concern was identified to PGandE in August, 1984 through its Quality Hotline program. This resulted in an additional investigation by PGandE. This concern is identified as Report No. M-651 and QCSR No. 067 (see attachments). A conclusion was reached that the tests were being performed satisfactorily but that the three groups involved did not understand each other's role and how the initial test data was derived. This latter item is the same problem as is discussed herein and may have led to the alleger's confusion.

SURVEILLANCE REPORT

Attachment to NRC Allegation 1276

ORGANIZATION:	UNIT:	PAGE	REPORT NO.	REV.
PT&C / Pullman Eng. / Pullman Q.A.	I & II	1	M-651	4
TYPE: Hydro Testing	TRENDING CATEGORY: M-Y-O (1)	OF 2	DATE PERFORMED: 8-15 Thru 8-20-84	

SCOPE: 1) Review of QCSP #067 2) Review Flow of Hydro Test packages per Applicable P G & E and Pullman procedures

ITEMS/DOCUMENTS SURVEYED: a) Mechanical Test procedures from M-28 b) Mechanical Field Instruction 2-9 c) Pullman ESD-229 & Form E-39 d) Pullman ESD-239 and Form E-98 e) Pullman KFP-14

PERSONS CONTACTED/TITLES:

Ken Landenberger	PT&C Eng.
Corwin Lehman	PT&C Eng.
Russ Chapman	PT&C Insp.
Bob Olderkamp	P³ Eng. Supv.
Bill Kimball	P³ Q.A. Supv.
Carol Rosen	P³ Q.A.

RESULTS: ☐ ACCEPTABLE AS CORRECTED DURING SURVEY ☒ ACCEPTABLE AS SURVEYED ☐ DISCREPANCIES IDENTIFIED

DISCREPANCIES:

1a

DISPOSITION/CONCLUSION:

1) Review of Allegations noted on QCSP #067 were addressed as follows: a) H.N.I and Pullman Q.A. Reviewed all Unit I hydro packages at time of M.S. signature. Any code violations were satisfied at that time. b) P G & E has evaluated all hydro tests per code requirements. c) All audit findings by Pullman Q.A. were answered satisfactorily.

Continued on Page 2 of 2

☑ ATTACHMENTS: Page 2 of 2

PRIORITY 4

☐ FOLLOW-UP REQUIRED

DATE	INSPECTOR	DATE	QC. INSPECTION SUPERVISOR	DATE	Q.C. SUPERVISOR
8/21/84	E.A. [signature]	8/21/84	E.A. [signature]	8/25/84	R.A. Holzgrafe

PACIFIC GAS AND ELECTRIC COMPANY
STATION CONSTRUCTION DEPARTMENT
DIABLO CANYON PROJECT

No. M-651
Page 2 of 2

2) Review flow of Hydro Test packages per applicable B&E and Pullman procedures:

a) M-28 hydro form giving pressure, temperature and time is prepared by PT&C hydro ENGINEER based upon line index and pipe specs. Information given is design information and does not include limiting factors. Tentative valve line-up is also included.

b) M-28 form is reviewed by Pullman hydro ENGINEER. Hydro ENGINEER reviews iso's for limiting factors, piping specs, elevations and re-calculates actual test pressures. Also checks valve line-up and does walk-down of hydro test.

c) Hydro package is reviewed by Pullman Q.A. for limiting factors, pressures, valve line-up and verification of test pressure calculations.

In conclusion, the three groups are not fully aware of the functions of each group. Recommend that a training session be held to explain each groups function and the interface between each group. As a minimum this training session should include:

1) Function of PT&C Hydro ENGINEER and how initial test data information is derived.

2) Function and "responsibility" of Pullman Hydro ENGINEERING group.

3) Pullman Q.A. review of hydro packages, problems encountered and actual review required.

Ken to get back w/me.
9/4 - 9/8

NRC Allegation #1281

Allegation Description:

Many QA reports never made it into the formal QA reporting system. I could reject work but couldn't initiate quality reports.

The alleger's general statement that "QA reports" never made it into the formal QA reporting system is totally untrue. Although the alleger does not specify which specific QA reports never made it into the formal QA reporting system, numerous QA reports such as NDE reports, process sheets, receiving reports, audits, DCNs, etc., are initiated and developed by individuals on a daily basis. All of these "quality reports" are part of the formal QA system, are processed in accordance with established procedures, and have obviously "made it" into the formal QA reporting system. The alleger admits that he could reject work and to do so he would have to issue a "quality report" of one kind or another which would require an appropriate disposition. Thus, even he concurs that he could initiate quality reports and, therefore, the allegation is groundless.

NRC Allegations #1282 and 1283

Allegation #1282 Description:

DCN's or other reports were often dispositioned without ensuring that the cause of the violation was identified and corrected.

Allegation #1283 Description:

Quality reporting system did not provide for identifying the full extent of deficiencies. Nor was there any useful effort to treat identified problems.

Contrary to the allegation, DCNs and other reports are not "often dispositioned without ensuring that the cause of the violation was identified and corrected." Each DCN and DR required that the cause of the discrepancy or deficient condition be identified on it by the use of the cause code. Each DCN and DR also requires that the specific deficiency noted be corrected, thereby ensuring resolution of the specific problem. Finally, the DCN or DR requires that the steps taken to prevent recurrence be mentioned on the form.

Sometimes cause is not determinable. In these instances, the investigator will either indicate that the cause is unknown or give his opinion on cause with a notation that it is only his opinion and the item is corrected. In cases where cause is determinable, disposition is made to address any generic implications of the discrepancy and not just to correct the specific discrepancy itself.

Contrary to the allegation, the quality reporting system identifies deficiencies and has provided a vehicle to begin extensive investigations into

identified problem. Indeed, the identification of weld cracks on rupture restraints in various quality reports led to an extensive investigation and the implementation of the rupture restraint repair program.

NRC Allegation #1284

Allegation Description:

Unexplained document alterations and welds made out of procedure were signs of deteriorating QA performance.

This allegation lacks specific information to permit a detailed response. The alleger simply does not set forth examples of "unexplained document alterations" or "welds made out of procedure."

NRC Allegations #1290, 1305, 1306, and 1307

Allegation #1290 Description:

Procedure changes were accomplished in an uncontrolled fashion through memoranda.

Allegation #1305 Description:

Procedure was being changed by a memorandum only distributed to management.

Allegation #1306 Description:

1/24/84 memorandum changes ESD 223 which is a QA violation.

Allegation #1307 Description:

4/11/83 memorandum changes ESD 223 which is a QA violation.

1. It is not correct that procedure changes were accomplished in an uncontrolled fashion by memorandum. When Pullman received a January 24, 1984 memorandum from PGandE, Pullman did not change its procedure but returned the request with the statement that "[t]his memo cannot be implemented immediately per your request due to a conflict between letters of instruction received from PGandE, Pullman internal correspondence, ESD 269, Pullman Corporate and NRC concerns." (Attachment A). Pursuant to proper procedure, the January 24, 1984 memorandum was reissued by the February 15, 1984 letter of D. A. Rockwell (Attachment B).

2. When the ESDs were subsequently changed by interim revision in accordance with paragraph 5.2.4 of ESD 269, they were distributed in a

controlled manner to all holders of the ESDs pursuant to Pullman Procedure ESD 269.

3. The January 24, 1984 memorandum did not change ESD 223 and was not a QA violation.

4. The April 11, 1983 memorandum (Attachment C), did not change procedure ESD 223. To the contrary, it was written in part as an instruction to ensure proper implementation of the disposition of DRs 4678 and 4730 previously written by Pullman on prior work on existing hangers (Attachment D).

5. While page 2 of Attachment A, at first glance, may seem to indicate support for the allegation, it does not. The NRC exit interview referred to in the first paragraph pertained to tardy modification by PGandE of its specifications and use of informal written communication in the interim between changes. It did not pertain to change of Pullman procedures. The second paragraph speaks to a general Pullman Corporate policy which was appropriately followed in this instance. Neither paragraph was intended to convey that Pullman's procedures were being, or had been, changed in an unacceptable manner.

Pullman Power Products Corporation

Diablo Canyon Nuclear Project
Post Office Box 367
Avila Beach, California 93424
Telephone (805) 595-2356

DATE: JANUARY 31, 1984

TO: J. ARNOLD, PG&E, RESIDENT MECHANICAL ENG.

FROM: H.W. KARNER, QA/QC MANAGER

SUBJECT: PG&E "PULLMA" MEMORANDUM #0002 DATED JANUARY 24, 1984

This memo can not be implemented immediately per your request due to a conflict between letters of instruction received from PG&E, Pullman internal correspondence, ESD-269, Pullman Corporate and NRC concerns.

PG&E's letter to PPP dated August 31, 1983, D.A. Rockwell to Paul Stieger/H.W. Karner states: "PG&E can not authorize a deviation from ESD-253 or other ESDs by issuing a letter authorizing changes."

Based on the above letter, PPP wrote an interoffice correspondence dated September 6, 1983, to all QA/QC/Engineering personnel from R. Hosman/H.W. Karner, which states:

> Any PG&E memo or letter directing PPP to deviate from a current ESD, QAI or QA Manual shall be disregarded until such time that Pullman incorporates the deviation in a PG&E approved ESD, QAI or QA Manual.

ESD-269 PREPARATION, REVISION AND CONTROL OF FIELD PROCEDURES, Paragraph 5.2.4:

> As it becomes necessary to implement immediate changes in the ESDs due to revisions in the PG&E design criteria, NRC Bulletins, etc., written enumeration of the required additions, deletions and/or revisions received from PG&E requesting immediate implementation shall constitute a valid change to the affected ESD. The change must be approved by the responsible PG&E Resident Engineer.

Note: Memorandum #0002 has not been signed by the Resident Mechanical Engineer.

PG&E's Quality Control group reviews all Pullman Power Products Procedures and revisions prior to approval. Memos have not been reviewed by PG&E QC.

Notes on NRC Exit Interview dated 1/19/84 indicate potential management control problems, specifically: "EDRs, MVRs and letters were used to revise construction specifications."

Pullman Power Products Director of Quality Assurance has indicated the issuance of memo-type changes to an ESD is "a definite lack of ESD control" and "This hap-hazard type of ESD revision and lack of control should be disposed with."

Pullman Power Products suggested resolution to this problem is as follows:

1. Send copies of proposed memos to Pullman Power Products for formal review.

2. Memos will be reviewed and incorporated into the applicable ESDs with accompanying Pullman comments within 20 working days.

3. PG&E will review and approve revised ESDs through existing procedures, including PG&E QC.

Your prompt attention is requested.

Harold W. Karner
QA/QC Manager

HWK:sam
Attachments
cc: R. Etzler w/att
D. Rockwell w/att
A. A. Eck w/att
K. Glenn, PG&E QC w/att
C. Seward, PG&E QA w/att
P. Stieger w/att
S. Cornish w/att

PULLMAN MEMORANDUM # 0002 Attachment A
Response to NRC #1290, 1305, 1306 and I307
Page 3 of 7

JAN 24 1983

TO: P. Stieger/H. Karner/S. Cornish DATE: January 24, 1984

FROM: J. Arnold/R. Tinkle/G. Thomas

PULLMAN POWER PRODUCTS
AVILA BEACH, CALIF
JOB #7177

OF: General Construction

AT: Jobsite EXT: 3504

SUBJECT: Inspection Requirements for Units 1 & 2 Pipe Support Modifications.

The following shall be implemented immediately.

Please revise ESD 223 and/or any other appropriate documents to incorporate these changes.

For Pipe Support modifications to part (but not all) of an existing Support, Pullman QC and Field Engineering shall inspect the existing portions to the following criteria:

I. Supports having unmodified portions with a latest QC Acceptance prior to 10/1/82.

The unmodified portions of these supports is defined as "existing work". Inspection of this existing work shall be as specified below and as stated elsewhere in ESD 223 (for example, sections 5.4.4.2, 5.4.4.3 and 6.4.1.1 E).

1. Pre-Inspection:

QC shall not perform any field inspection of existing work during Pre-Inspection. The Pullman Power Products or PTGC Field Engineer shall pre-inspect as follows:

a) Non-welding workmanship items (i.e., loose nuts, incorrect gaps, etc.) and existing welds having obvious defects/discontinuities exceeding ESD 223 requirements shall be reworked as directed in the pre-inspect package by the field engineer. (Authorization on the process sheet by PTGC is not required.)

b) Existing welds which are undersize shall be as-built/redlined by the field engineer or reworked as determined by the field enginee. in accordance with tolerances specified in ESD 223. (Rework does not require authorization by PTGC on the process sheet.)

c) Weld symbols for existing welds shall be red-lined by the field engineer for conformance to AWS A 2.4 and ESD 223. No PSDTC is required.

FOR INFORMATION ONLY

2. Workmanship Inspection:

a) Field Engineering.

Verify that 1 a, b and c (above) were satisfied for existing work on supports that were pre-inspected prior to 10/1/83.

For supports pre-inspected on or after 10/1/83, it is not necessary to inspect the existing welds again.

b) QC.

Inspect the following:

-General, non-welding workmanship (loose nuts, etc.)

-Existing welds that were reworked (Ref: 1a, above).

-Verify that the weld sizes and/or symbols of existing welds that were red-lined (Ref: 1b and c, above) are correct.

3. Redlining/As-Built/FE2:

Field engineering shall insure that the configuration is as-built in accordance with ESD 223.

4. Quality Control - Q2:

Pullman Quality Control shall perform a final review of the as-built drawing and configurations for compliance with as-builting tolerances as specified in ESD 223.

II. Supports having unmodified portions with a latest QC Acceptance on or after 10/1/82.

The unmodified portions of these supports do not require re-inspection by QC or Engineering. This applies to all sections of ESD 223 addressing existing work.

These changes supercede the 4/11/83 memo(copy attached). DR's 4678 and 4730 no longer required to document discrepancies on existing welds.

Rick Tinkle
Lead Hanger Engineer, Unit 1

Gene Thomas
Lead Hanger Engineer, Unit 2

Reply Requested: No
Originator: GT/PAW/mar

cc: J. Macias
A. Murphy
R. Meredith
J. Wells
R. Tinkle
J. Van Klompenburg
C. Dougherty
E. Johnston
P. Werts
G. Thomas
A. Kulikowski

FOR INFORMATION ONLY

PACIFIC GAS AND ELECTRIC COMPANY

245 MARKET STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) [illegible] • TWX 910 372 6587

P. O. Box 117
Avila Beach, California 93424
(805) 595-2324

August 31, 1983

SEP 1

Pullman Power Products
Diablo Canyon Nuclear Project
Avila Beach, California 93424

Attention: Mr. Paul Stieger/Mr. H. Karner

Diablo Canyon Project
Transmittal of the Q.C.
Accepted As-Built Drawings
to PG&E

Gentlemen:

This letter is in response to your letter dated August 29, 1983, which discussed the transmittal of Unit I Fuel Load priority, original As-built drawings to PG&E. PG&E can not authorize a deviation from ESD-253 or other ESD's by issuing a letter authorizing changes.

Per discussion between Mr. Charles Braff (PG&E) and Mr. B. Kimmel (PPP) on August 30, 1983, please prepare an ESD-253 change to reflect the new As-built flow. Please accomplish this with a Q.A. Instruction so work can proceed and at your convenience, an ESD change.

If you have any questions contact Mr. Charles Braff at extension 3819.

Cordially,

D. A. Rockwell
Project Field Engineer

No response required

INTEROFFICE CORRESPONDENCE

DATE SEPTEMBER 6, 1981

TO ALL QA/QC/ENGINEERING PERSONNEL

FROM HOSMAN/KARNER

SUBJECT PGandE MEMOS AND LETTERS

Any PGandE memo or letter directing Pullman Power Products to deviate from a current ESD, QA Instruction or QA Manual shall be disregarded until such time that Pullman incorporates the deviation into a PGandE approved ESD, QA Instruction or QA Manual. All other PGandE memos and letters distributed for supplementation or clarification of an ESD, QA Instruction or the QA Manual shall be approved by the Pullman QA/QC Manager prior to distribution. All previous PGandE memos and letters shall be enforced by Pullman until such time that they are incorporated into a PGandE approved or revised ESD, QA Instruction or QA Manual, whichever is applicable. Once incorporated, the PGandE memo or letter shall become void.

R. Hosman
QA Supervisor

H. Karner
QA/QC Manager

RH:HK:sam

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON PROJECT • GENERAL CONSTRUCTION
P O BOX 117 • AVILA BEACH CALIFORNIA 93424 • (805) 595-232

February 15, 1984

Pullman Power Products
P.O. Box 367
Avila Beach, CA. 93424

ATTENTION: Paul Stieger

Diablo Canyon Project
Specification 8711
Pipe Support Modifications

Dear Mr. Stieger:

The following shall be implemented immediately.

For Pipe Support modifications to part (but not all) of an existing Support, Pullman QC and Field Engineering shall inspect the existing portions to the following criteria:

I. Supports having unmodified portions with a latest QC Acceptance prior to 10/1/82.

The unmodified portions of these supports is defined as "existing work". Inspection of this existing work shall be as specified below and as stated elsewhere in ESD 223 (for example, sections 5.4.4.2, 5.4.4.3 and 6.4.1.1 E).

1. Pre-Inspection:

QC shall not perform any field inspection of existing work during Pre-Inspection. The Pullman Power Products or PTGC Field Engineer shall pre-inspect as follows:

a) Non-welding workmanship items (i.e., loose nuts, incorrect gaps, etc.) and existing welds having obvious defects/discontinuities exceeding ESD 223 requirements shall be reworked as directed in the pre-inspect package by the field engineer. (Authorization on the process sheet by PTGC is not required.)

b) Existing welds which are undersize shall be as-built/redlined by the field engineer or reworked as determined by the field engineer in accordance with tolerances specified in ESD 223. (Rework does not require authorization by PTGC on the process sheet.)

c) Weld symbols for existing welds shall be red-lined by the field engineer for conformance to AWS A 2.4 and ESD 223. No PSDTC is required.

2. Workmanship Inspection:

a) Field Engineering.

Verify that 1 a, b and c (above) were satisfied for existing work on supports that were pre-inspected prior to 10/1/83.

For supports pre-inspected on or after 10/1/83, it is not necessary to inspect the existing welds again.

b) QC.

Inspect the following:

-General, non-welding workmanship (loose nuts, etc.)

-Existing welds that were reworked (Ref: 1a, above).

-Verify that the weld sizes and/or symbols of existing welds that were red-lined (Ref: 1b and c, above) are correct.

3. Redlining/As-Built/FE2:

Field engineering shall insure that the configuration is as-built in accordance with ESD 223.

4. Quality Control - Q2:

Pullman Quality Control shall perform a final review of the as-built drawing and configurations for compliance with as-builting tolerances as specified in ESD 223.

II. Supports having unmodified portions with a latest QC Acceptance on or after 10/1/82.

The unmodified portions of these supports do not require re-inspection by QC or Engineering. This applies to all sections of ESD 223 addressing existing work.

These changes supercede the 4/11/83 memo (copy attached). DR's 4678 and 4730 are no longer required to document discrepancies on existing welds.

D.A. Rockwell
Project Field Engineeer

Attachments: Yes

Reply Requested: No

JA Originator: GT/PAW/jmu

cc: J. Macias
A. Murphy
J. Wells
R. Tinkle
J. VanKlompenburg
S. Cornish (Pullman)
A. Kulikowski
C. Dougherty
R. Meredith
E. Johnston
P. Werts
H. Karner (Pullman)
G. Thomas

G =E
MORANDUM

Date April 11, 1983

Ryan, P. Stieger, S. Kapsalis, H. Kerner Location DCPP Ext.

J. Arnold, R. Meredith, G. Thomas, R. Tonkee DCPP Ext. 3557

ECT Policy Change for Pipe Support Preinspection File No

...tive 4/11/83, please use the following guidelines for preinspection of pipe supports. These ...tires will apply to preinspection of supports which are to be modified or inspected to a ...evision prior to releasing for work:

...odifications:

) The Pullman Pipe Support Field Engineer shall check the feasibility of the design modifications.

) The Q.C. Inspector will inspect all of the existing welds on supports to be modified per new revision and identify any discrepancies between the existing welds and current ESD 223 acceptance criteria using the respective DR 4678 or DR 4730 disposition. The Q.C. Inspector shall then route the drawing back to the Pullman Pipe Support Field Engineer who will instruct the crafts and/or as-builters, via the DR disposition and the process sheet, as to what action should be taken to resolve the welding discrepancies. The PG&E Inspector will not be required to concur on the DR form. This step will be ...ed with reference to this memo.

) After completion of the support modification, the Pullman AS-Builters will as-built the support - both the new and the unmodified portions - to the current ESD 223 criteria. They shall note which as-built changes are on the unmodified portion of the support.

... revisions released for preinspection

) The Pullman AS-Builters will as-built the support to the current ESD 223 criteria.

) The Q.C. inspector shall inspect the entire support to the as-built drawing using current ESD 223 criteria and the welds to the criteria of DR 4678 or DR 4730.

General Notes:

) For any discrepancies on the unmodified part of the supports which, in the Pullman FE's judgement, are significant enough to warrant correction by reworking rather than as-builting, PG&E written approval on the process sheet is required.

) Any discrepancies on pipe attachments shall be dispositioned in the conventional manner (DCN's/DR's).

) Where this memo conflicts with current ESD requirements, this memo shall govern.

McGRAW	SCHULTZ	R. L. Meredith (signature)
... E	LANKES	R. L. Meredith
... G	GURLEY	Unit #1 Mech. Resident Eng.
KERNER-30	ALL FIELD ENG.	(signature)
SKIP	OLDENKAMP	J. Arnold
KAPSALIS	PACIFICO	Unit #2 Mech. Resident Eng.
...	MACAULAY	P G and E EXT. NO. 6441

331

Pullman Power Products

ORIGINAL

DISCREPANCY REPORT

(IS) or (IS NOT) ATTACHED

D.R. NO. 4678
ISO. NO. VARIOUS HANGERS
UNIT NO. 1
CODE NO. 3/8

CUSTOMER: Pacific Gas & Electric — SPEC. NO: 8711 — DATE: December 11, 1982 1/6/83
PROJECT: Diablo Canyon — JOB NO.: 7177 — INSPECTOR: F. Lyautey/R. Llewellyn

DISCREPANT ITEM: UNACCEPTABLE WELD CONDITIONS ON EXISTING HANGER INSTALLATIONS

EXPLANATION OF DISCREPANCY: REWRITTEN PER PG&E REQUEST.

Preinspection of hangers which are currently being released for modification, which is required by ESD 223, has shown that there is a weld quality/size problem on the unmodified portions of installations, excluding the weld of weld attachments to piping. The following conditions have been identified:

1. Undersized welds.
2. Incomplete welds.
3. Weld defects.

FOR INFORMATION ONLY

Some of these conditions may require weld repair to meet design requirements.

NOTE: These conditions also exist on hangers which are not being issued for modification. DR will be prepared to document these discrepancies. ← Ref. DR 4749

Revision 1 is transmitted to PG&E for further evaluation and disposition.

RECOMMENDED DISPOSITION: INDICATE APPROVAL BY CIRCLING THE APPROPRIATE "RECOMMENDED DISPOSITION"

(1) Undersized, oversized or incomplete welds shall be as-built unless the PG&E inspector determines that additional welding on the undersized or incomplete welds is required.

(1A) For weld defects and undersized or incomplete welds which require additional welding, the location, deficient condition, and disposition shall be recorded and verified in writing by QC, Engineering and PG&E. This information shall be recorded (see example form attached) and will be retained as part of the hanger document package.

(2) Weld defects which do not require additional welding shall be repaired by removal of the defect. No documentation of individual defects is necessary.

PG&E QC Reviewed 1/3/83

--CONTINUED ON PAGE 2--

Approved By P.P.P. Field Q.A. Mgr. [signature] Date 12/30/82 Customer [signature] Date 12/30/82

FINAL DISPOSITION: ☐ In Accordance With Above ☐ Other (explanation and approval required) SEE REV. 2
Work Completed Insp: ______ Date: ______ Work Completed Insp: [signature] Date: 1/23/84

EXPLANATION (IF NECESSARY): KAP 10-20-83 MUR#4419 10/21/83

Revision 1 to revise PG&E disposition.

P.P.P. Field Q.A. Manager [signature] Date 1/6/83 Customer [signature] 10/21/83

STEPS TO PREVENT RECURRENCE ☐ Not Applicable ESD 223 has been revised to more clearly detail installation and inspection requirements. Adequate training has been provided for new and existing inspectors. Ongoing training sessions are conducted concerning specific problem areas and revisions are being made to ESDs that affect installation and inspection of hangers.

Field Q.A. Manager [signature] 12/30/82

DISTRIBUTION: ☒ Master Q.A. File ☒ Auth. Insp. ☒ Engineering Dept. ☐ Other ______
☒ Customer ☐ Receiving ☐ Field Inspector (______)

ATTACH SKETCH IF NECESSARY

10 CFR 21 (IS NOT) ATTACHED

Pullman Power Products

DISCREPANCY REPORT

D.R. NO. 4678 PAGE 2 ⚠1
ISO. NO. VARIOUS HANGERS
UNIT NO. 1
CODE NO. 3/8

CUSTOMER: Pacific Gas & Electric SPEC. NO: 8711 DATE: December 11, 1982 ⚠1 1/6/83
PROJECT: Diablo Canyon JOB NO.: 7177 INSPECTOR: F. Lyautey/R. Llewellyn

RECOMMENDED DISPOSITION CONTINUED:

3) ESD 223 will be revised to reflect the above requirements, at which time, this DR may be closed.

NOTE: Any undersize welds, incomplete welds, or weld defects shall be dispositioned by 1; 1A; 2; or 3 as deemed ~~appropriate~~.
CAW 11/30/82

⚠1 4. PG&E to disposition. ~~Revise~~ ESD 223, Par 6.8.2.5 PER ~~PCR MVR #4418~~ ATTACHED SHEETS AND CLOSE DR UPON PG&E APPROVAL OF THE REVISION.

KAP
~~2-1-83~~
10-20-83

BRT 10/21/83

J. [illegible] 10/21/83

FOR INFORMATION ONLY

6.8.2.5 Fillet Weld Sizes for Supports

A. The fillet weld size shall be as specified on the drawing. Where the size is not specified, the fillet shall be sized per AISC minimum. Welds shall not be less than the AISC recommended minimum weld size. Fillet welds in any singular continuous weld shall be permitted to under run the nominal fillet weld size required by 1/16" without correction, provided that the undersized portion of the weld does not exceed 10% of the length of the weld.

As-built required to show nominal fillet weld size.

B. Overweld: For existing welds any amount of overweld is acceptable, provided distortion is not excessive. For new welds the maximum overweld shall be 100% OVERSIZED FOR WELDS UP TO AND INCLUDING 3/16" AND 50% OVERSIZED FOR WELDS ~~OVER AND INCLUDING~~ 1/4" AND LARGER (EXCLUDING PIPE ATTACHMENT WELDS).
As-built is required to show nominal weld size.

C. Underweld: For existing welds under weld is acceptable provided that AISC minimums are met.

As-built required to show nominal fillet weld size.

D. Delete

E. For existing installations, welding which was performed but was not required as part of the design is acceptable.

As-built is required to show additional welding.

FOR INFORMATION ONLY

DR NO. 4678

HANGER NO. _____ REV. NO. ____ ORIGINAL INSTALLATION DATE _____

NOTE: Areas requiring weld repair shall be agreed upon by QC, Engineering, and PG&E. The location and discrepant condition shall be noted below. The repair shall be accomplished in accordance with design and ESD 223. Workmanship inspection will verify completion of repair.

--- EXAMPLE ---

DESIGN WELD	LOCATION DESCRIPTION	DISCREPANT CONDITION	DISPOSITION	PPP QC INIT/DATE	PG&E INIT/DATE	PPP ENG INIT/DATE
1/4" fillet	North end of Item 3 to Item 1	Undersized by 1/8" for 2" of weld	Build up to des. size			
1/2" fillet	South end of Item 5 Item 11	Slag inclusions 1/16" w. x3" lg.x1/4" dp.	Remove indications/repair to design size			

FOR INFORMATION ONLY

PULLMAN POWER PRODUCTS CORPORATION
JOB #7177
AVILA BEACH, CALIFORNIA 93424 • (805) 595-2356

Attachment AD
Response to NRC
1290, 1305, 1306
~~and 1307~~
Page 5 of 5

TO: Fletcher
SLADE
CHALEY

DATE:

SUBJECT: Incomplete DCN's

The following D.C.N.('s) is are incomplete and being returned to you for additional information.

Please complete the D.C.N. and return it directly to me A.S.A.P.

FOR INFORMATION ONLY

I need the back A.S.A.P.

SPK

[redacted]

ADDITIONAL INFORMATION REQUIRED:

THIS PROBLEM HAS BEEN RESOLVED SOLELY BY THE GENERATION OF A DR 4678 DCN 909-042 WAS REDUNDANT AND UNNECESSARY AND WAS VOIDED BY ITS ORIGINATOR

[signature] 5 Oct 83

Peggy, please note

Skip 10/4/83

S.T. Kapsalis [signature]
S.T. Kapsalis
PPPC Engineering Supervisor

336

NRC Allegation #1293

Allegation Description:

Pullman was drilling holes without approve-for-construction drawings. When a reinforcement bar is hit, only a verbal OK by quick fix is necessary to continue which conflicts with ESD 223.

This allegation is similar to the concern addressed in response to NRC Allegation #906 above. The allegation, as written, is partially correct and partially incorrect. It is apparent the alleger does not understand the preinspection program. Pullman craft personnel were drilling holes without Pullman approved-for-construction (AFC) drawings. They were working with PGandE preinspection engineers in accordance with PGandE procedures to determine the constructability of hangers and preparing the AFC drawings for Pullman to use when PGandE released the drawings for installation.

The PGandE preinspection engineers have authority to instruct Pullman craft to relocate drill holes in the event rebar is encountered. The relocation is done within the tolerances provided by ESD 223. In some cases, relocation of the holes within the tolerances has not been possible. On those occasions, the PGandE preinspection engineer has the authority to find a location where the anchor holes can be drilled without contacting rebar. When such a location is identified, the holes are drilled and the new location is sent to Engineering for analysis, approval, and issuance of a design change before the drawing is released for construction.

Since the holes that have been drilled outside the tolerances of ESD 223 are

not released for construction until a design change has been issued by Engineering, neither a "verbal quick fix" has taken place nor has there been a conflict with ESD 223.

The fact that rebar is encountered during drilling is not in conflict with ESD 223, which states that rebar shall not be cut/drilled through without prior authorization. Prior authorization is necessary so that the matter can be reviewed by Engineering. When the rebar is contacted unexpectedly during drilling, Engineering reviews the matter to relocate the hole. In fact, ground fault interrupters are used during drilling so that drilling automatically stops when rebar is encountered, thus preventing cutting or drilling through rebar. In addition, carbide tipped drill bits are used to limit damage to rebar.

NRC Allegation #1294

Allegation Description:

Informal instructions omitted QC documentation controls contained in the procedures, which then were skipped in practice.

PGandE and its contractors are unaware of either the specific informal instructions referred to or any general instructions to deviate from QC documentation controls contained in the approved procedures, and without more information the allegation cannot be addressed further. QA reviews, PTGC reviews, Pullman internal audits, and PGandE audits exist and are in place to identify and resolve any procedural deviations from documentation controls that may result for whatever reason.

NRC Allegation #1295

Allegation Description:

Lost process sheets resulted when procedures were violated and the QC reporting system was suppressed.

There is no definitive indication that the occasional loss of process sheets was due to violating procedures or suppressing the QC reporting system. There are only a limited number of instances where losses have occurred, and the reasons appear to be varied and the result of the sheer volume of documentation handled.

Engineering, QC, and/or QA reviews identify missing documentation and require reconstruction of the documents based on other records, reinspections, and/or rework. The final documentation package must include the appropriate documents or a justification for them not being there. Subsequent audits verify that the respective packages are complete as required.

NRC Allegation #1296

Allegation Description:

I was told by management to approve a Pullman request for authorization to add hangers to the exception list even though the process sheet was lost.

PGandE developed a list known as the exception list to identify and track hangers that were "in work." As part of the tracking system, Pullman was required to submit a "Request for Authorization" to PGandE to permit a hanger to be added to the exception list. Each "Request for Authorization" requires that the reason for the request be supplied on the form. Without a specific reference to the particular "Request for Authorization" mentioned in the allegation, a specific response is not possible.

In general, the request identified in the allegation does not appear to violate any procedure. If the reason for the request was to reinspect the hanger, it would appear to be part of the process of recreating the missing process sheet identified in the allegation.

Missing documentation in specific hanger packages may be identified at various stages of construction. When a document is found to be missing, it is necessary to recreate this missing document from other parallel or supporting documents to complete the package or even to reperform the inspection. Final QA review verifies that all required documentation is included in the document package. In a case such as this, the process sheet would be identified as "RECREATED" and the package would be considered closed.

This policy does not controvert any procedures and is an accepted way of handling situations where paperwork is inadvertently lost.

NRC Allegation #1299

Allegation Description:

ESD's weren't enforced because even supervisory personnel did not know what was in them.

It is difficult to find the alleger's claim credible in light of the constant use of the Pullman procedures. The requirements of the various ESDs always have been enforced and, in those limited cases where this may not have been done, any such discrepancies would have been appropriately noted and corrected pursuant to procedure. Each and every supervisor may not be aware of the specifics of each and every ESD, but each is aware of the content and requirements of those ESDs which are regularly applicable to his area of responsibility.

If the supervisor is unfamiliar with a particular ESD or portion thereof, any questions he may have are reviewed with appropriate individuals until the questions are answered.

NRC Allegation #1301

Allegation Description:

ESD 223 conflicted with ESD 264 which requires that weld size comply with drawings. ESD 223 directs that overwelding be ignored and not changed on the as-built.

This subject was previously addressed in response to GAP #180, #181, and #182 submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

ESD 264, "Process Planning and Control Process Sheets," details the requirements for preparation and control of process sheets. Paragraph 6.3.4.B(5) lists the tasks which a QC inspector shall perform, one of which is to assure on Item 10(c) on the process sheet that, "[w]eld sizes comply with the drawing." ESD 223, "Installation and Inspection of Pipe Supports," provides the criteria for acceptance of a weld depicted on drawings. The conflict about which the alleger complains is that the instructions on how to fill out a process sheet did not specifically state that the weld sizes should conform to the tolerance criteria listed in ESD 223 in addition to the drawing. Since QC inspectors did inspect all welds to the criteria of ESD 223, there are no safety implications that resulted from this allegation. Item 10(c) of ESD 264, however, has been revised to state that "weld sizes comply with the AFC drawings and ESD 223."

Section 6.8.2.5(B) of ESD 223 provides:

Overweld: For existing welds any amount of overweld is acceptable provided distortion is not excessive. For new welds the maximum overweld shall be 100% oversized for welds up to and including 3/16" and 50% oversized for welds 1/4" and larger. (Excluding pipe attachment welds.) AS-BUILT shall show nominal weld size as originally specified on design drawing.

While it might appear to the alleger that oversize welds are ignored, they are not. In fact, Section 6.8.2.5(B) was added to ESD 223 only after PGandE Engineering analyzed the design and safety effects of weld conditions identified, including oversize, in DRs 4678 and 4730.

GAP #180, 181, and 182, Petition at 6-7.

It is alleged that:

On December 28, 1983, Pullman modified installation procedure ESD-223 -- which also provides the acceptance criteria for QC inspectors -- by adding the following provision: "D. For existing installations, welding which was performed but was not required as part of the design is acceptable . . ." (citing ESD-223, "Installation and Inspection of Pipe Supports, "at I, V and 46.) This practice can create unaccounted residual stress on the corresponding pipe support. (citing 2/27/84 Anon. Aff. at 4.)

On December 28, 1983, Pullman also amended ESD-223 with the following provision: "E. For existing installations, welding which was not performed but was required as part of the design is acceptable." (citing ESD-223 at I, V, and 46.) This waiver suggests that faulty welds also would be acceptble (sic), since they could be sacrificed entirely. In other words, anything that does (or does not) exist is acceptable. This procedure revision suggests that quality assurance standards are not just deteriorating; they have collapsed. ESD-223 governs safety-related pipe hangers throughout the plant.

Both amendments were made with the full knowledge of PG&E, pursuant to a December 9, 1983 meeting between Pullman and PG&E. (citing ESD-223 at 11.) The excuse offered for accepting these deviations from design was that through "as-built" drawings, further engineering analysis could determine whether the original design requirements were necessary. (citing ESD-223 at 46.) The excuse cannot wash. Valid QC inspection criteria are one mandatory step among many required for a minimum quality assurance program. They should not be sacrificed because of another independently-required safeguard. Second, the as-built reviews themselves are of questionable reliability. (citing GAP 3/1/84 Petition at 19, Item 216.)

8. These three allegations arise out of a misunderstanding of a December 1983 revision to Pullman procedure ESD-223. The revision resulted from a series of minor variations in welds that had been discovered during pre-inspection of existing pipe supports prior to their release for modifications which were required by the Corrective Action Program.

Undersized fillet welds, incomplete fillet welds, and minor weld defects were observed on existing pipe supports. PGandE Engineering reviewed the effect of such variations on the safety of existing supports and, consistent with design and licensing requirements, provided disposition for the existing welds referenced in the Minor Variation Reports.

9. Contrary to the implication of the allegations, the quality review of existing welds was not sacrificed by the procedural change but remained a requirement of the program. In its approval of the proposed procedure, PGandE specifically required that:

> "1. Undersize, oversize, or incomplete fillet welds shall be as-built, provided that weld quality meets the requirements of ESD-223, paragraph 6.8.2.4 B, C, and D." (Emphasis added).

Paragraph 6.8.2.4 B requires that:

> "B. The final surface of all welds shall be substantially free of sharp surface irregularities, excess surface slag, slag inclusions, and shall have a good workmanship appearance. Excessive surface irregularities may be removed by chipping or grinding provided the weld size specified on the support is maintained."

10. Contrary to GAP #181, the quality assurance program remains in effect for all welds. As discussed in the response to GAP #174 and 295, the February 15, 1984 revision to the pre-inspection program does not eliminate weld quality inspection, but merely shifts the time of inspection of existing welds from pre-inspection to after installation of the modification. At such time, all new and existing welds that

have been "red-lined" by the pre-inspection engineer or reworked are subject to quality control inspection for acceptability according to the same criteria.

11. In GAP #180 and 181, reference to the as-built process as part of the existing weld review program has been conveniently omitted by the alleger. Where welding which was not required by the existing design drawing has been performed on existing supports, or where required welding was not performed, the field engineer identifies the items for rework or indicates such discrepancies on the as-built drawings to ensure that each pre-existing discrepancy will be individually evaluated and accepted. After completion of the construction, QC confirms the accuracy of the as-built drawing by inspecting the completed support against the drawing.

12. All as-built drawings are transmitted to Project Engineering for review. Engineering reviews the as-builts and verifies compatibility with existing calculations or performs new calculations, as required. If compliance to design criteria is not demonstrated by calculation, appropriate corrective action, including the issuance of a modified support design or rewelding, is taken. Therefore, the design/construction process continues to ensure that the as-built configuration is accurately depicted on drawings, qualified by calculation, and acceptable. This entire process is controlled by procedure and documented.

NRC Allegation #1304

Allegation Description:

An ESD change restricted inspectors from writing reports on poor welding in existing work. Defects were pushed back to the as-built review. PGandE's claim that all work was covered by QA is false.

The subject matter of this allegation was previously addressed in response to GAP #180, #181, and #182 submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

As a result of the February 15, 1984 memorandum, all new work and all rework were inspected by QC after the work was installed. During preinspect, discrepancies in size or type of existing welds were evaluated by an Engineering review of fitness for design purpose. Such discrepancies, which were reviewed and accepted, were not defects. Discrepancies that were not accepted by Engineering were reworked and subject to QC review after rewelding. Finally, if an indication escaped discovery in pre-inspection, such condition would be subject to QC report at the time of as-built review. However, as discussed in PGandE's response to NRC Allegation #1242, all work was covered by a QA program.

GAP #180, 181, and 182, Petition at 6-7.

It is alleged that:

On December 28, 1983, Pullman modified installation procedure ESD-223 -- which also provides the acceptance criteria for QC inspectors -- by adding the following provision: "D. For existing installations, welding which was performed but was not required as part of the design is acceptable . . ." (citing ESD-223, "Installation and Inspection of Pipe Supports, "at I, V and 46.) This practice can create unaccounted residual stress on the corresponding pipe support. (citing 2/27/84 Anon. Aff. at 4.)

On December 28, 1983, Pullman also amended ESD-223 with the following provision: "E. For existing installations, welding which was not performed but was required as part of the design is acceptable." (citing ESD-223 at I, V, and 46.) This waiver suggests that faulty welds also would be acceptble (sic), since they could be sacrificed entirely. In other words, anything that does (or does not) exist is acceptable. This procedure revision suggests that quality assurance standards are not just deteriorating; they have collapsed. ESD-223 governs safety-related pipe hangers throughout the plant.

Both amendments were made with the full knowledge of PG&E, pursuant to a December 9, 1983 meeting between Pullman and PG&E. (citing ESD-223 at 11.) The excuse offered for accepting these deviations from design was that through "as-built" drawings, further engineering analysis could determine whether the original design requirements were necessary. (citing ESD-223 at 46.) The excuse cannot wash. Valid QC inspection criteria are one mandatory step among many required for a minimum quality assurance program. They should not be sacrificed because of another independently-required safeguard. Second, the as-built reviews themselves are of questionable reliability. (citing GAP 3/1/84 Petition at 19, Item 216.)

8. These three allegations arise out of a misunderstanding of a December 1983 revision to Pullman procedure ESD-223. The revision resulted from a series of minor variations in welds that had been discovered during pre-inspection of existing pipe supports prior to their release for modifications which were required by the Corrective Action Program.

Undersized fillet welds, incomplete fillet welds, and minor weld defects were observed on existing pipe supports. PGandE Engineering reviewed the effect of such variations on the safety of existing supports and, consistent with design and licensing requirements, provided disposition for the existing welds referenced in the Minor Variation Reports.

9. Contrary to the implication of the allegations, the quality review of existing welds was not sacrificed by the procedural change but remained a requirement of the program. In its approval of the proposed procedure, PGandE specifically required that:

> "1. Undersize, oversize, or incomplete fillet welds shall be as-built, provided that weld quality meets the requirements of ESD-223, paragraph 6.8.2.4 B, C, and D." (Emphasis added).

Paragraph 6.8.2.4 B requires that:

> "B. The final surface of all welds shall be substantially free of sharp surface irregularities, excess surface slag, slag inclusions, and shall have a good workmanship appearance. Excessive surface irregularities may be removed by chipping or grinding provided the weld size specified on the support is maintained."

10. Contrary to GAP #181, the quality assurance program remains in effect for all welds. As discussed in the response to GAP #174 and 295, the February 15, 1984 revision to the pre-inspection program does not eliminate weld quality inspection, but merely shifts the time of inspection of existing welds from pre-inspection to after installation of the modification. At such time, all new and existing welds that

have been "red-lined" by the pre-inspection engineer or reworked are subject to quality control inspection for acceptability according to the same criteria.

11. In GAP 9180 and 181, reference to the as-built process as part of the existing weld review program has been conveniently omitted by the alleger. Where welding which was not required by the existing design drawing has been performed on existing supports, or where required welding was not performed, the field engineer identifies the items for rework or indicates such discrepancies on the as-built drawings to ensure that each pre-existing discrepancy will be individually evaluated and accepted. After completion of the construction, QC confirms the accuracy of the as-built drawing by inspecting the completed support against the drawing.

12. All as-built drawings are transmitted to Project Engineering for review. Engineering reviews the as-builts and verifies compatibility with existing calculations or performs new calculations, as required. If compliance to design criteria is not demonstrated by calculation, appropriate corrective action, including the issuance of a modified support design or rewelding, is taken. Therefore, the design/construction process continues to ensure that the as-built configuration is accurately depicted on drawings, qualified by calculation, and acceptable. This entire process is controlled by procedure and documented.

13. With regard to residual stress in pipe supports, as alleged in GAP #180, such stresses that may be caused by overwelding are not a significant factor. Residual stresses are generally local and self-relieving, and exist in all welded construction and in many steel-based materials. The piping supports are constructed, primarily, of light and medium thickness plain carbon steel, such as ASTM A-36, steel plates and shapes. The supports are generally not highly restrained. ASTM A-36 is a ductile material with excellent weldability characteristics and is not subject to failure from residual welding stresses as much as are high-strength steels when subject to high restraint. The design codes take residual stresses into consideration in the specifications of load combinations and allowable stresses.

NRC Allegations #1308 and #1309

Allegation #1308 Description:

January 24, 1984 memo terminated the disposition of a procedure thru DR 4678 which had superceded the ESD procedures. It is improper to amend a procedure thru a DR disposition.

Allegation #1309 Description:

January 24, 1984 memo terminated the disposition of a procedure thru DR 4870 which had superceded the ESD procedures. It is improper to amend a procedure thru a DR disposition.1/

The subject matter of these allegations was previously addressed in response to GAP #174, #180, #181, #182, and #295 submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

As discussed in response to NRC Allegation Nos. 1290, 1305, 1306, and 1307, no action was taken on the January 24, 1984 memorandum. The February 15, 1984 letter from PGandE, which reissued the January 24, 1984 memorandum, did modify the scope of preinspection which had been established by the disposition of DRs 4678 (Unit 1) and 4730 (Unit 2). The modification was made, however, after PGandE conducted an engineering safety evaluation of the effect of the types of discrepancies reported in the DRs. The discrepancies reported were resolved under Minor Variation Reports. Contrary to the allegation, amendment of a procedure because of the disposition of a DR is a proper practice.

1/ Typed as received. DR 4670 does not relate to amendment of ESD 223.

GAP #174 and #295, Petition at 5 and 40, respectively.

It is alleged that:

A February 21, 1984 PG&E memorandum institutionalized the above violation by stripping Pullman QC inspectors of the organizational freedom to apply corrective action for weld symbol deficiencies on previously accepted work. That authority was reserved for PG&E construction department preinspection field engineers. (citing 2/26/84 Anon. Aff. at 11.)

Until February 15, 1984, PG&E preinspection field engineers did not have the organizational freedom to look at any work already accepted, regardless of deficiencies. To illustrate, they were instructed not to look at any existing welds already accepted by Pullman. One current engineer explained what they had to ignore: "The paperwork was so sloppy, however, that I could not tell when a weld had been accepted, or under what revision of the installation procedure, or under what acceptance criteria." (citing 2/27/84 Anon. Aff. at 6.)

1. The above two allegations relate to a February 15, 1984 memorandum (there was no February 21 memorandum) signed by D. A. Rockwell, which reallocated responsibilities relating to, among other things, the examination of previously accepted work in conjunction with the implementation of design changes. Procedures covering the reinspection of such work were in place at all times.

2. When a pipe support design modification is received, a pre-inspection is performed to determine the constructibility of the change. Prior to February 15, 1984, each pre-inspection activity was performed by a pre-inspection field engineer and a QC inspector. The primary assignment of the pre-inspection field engineer was to check the constructibility of the design modification, i.e., could it be installed

as shown and where shown, and to recommend solutions if construction problems existed. He could also note the differences between the drawing and the existing installation. To perform the constructibility review, the pre-inspection field engineer was issued only the latest revision of the hanger drawing. The pre-inspection engineer was not responsible for conducting final quality control inspections of previously accepted work, and pre-inspection was not used as a substitute for the required QC inspections.

3. Prior to rework or modification, the QC inspector was assigned to inspect all existing welds on the supports to be modified against the revised design drawing and to identify any discrepancies between the existing welds and/or symbols and ESD-223 acceptance criteria.

4. After all work was completed and the new as-built drawings prepared, the QC inspector inspected the newly modified support to ensure that it complied with acceptance criteria and the new as-built drawing. After acceptance by QC, the as-built drawing was transmitted to PGandE Project Engineering for final review and acceptance of the as-built design.

5. The pre-inspection program and associated responsibilities were revised by the February 15, 1984 memorandum to more efficiently utilize available manpower without adversely impacting plant quality. The revised program eliminated QC participation in the pre-inspection process and clarified all pre-inspection responsibilities of the

pre-inspection field engineer, including the "red-lining" of existing welds and/or symbols which may not have been accurately depicted on the revised design drawing.

6. The QC inspection, including review of all new work, all rework, and all items "red-lined" by the pre-inspection field engineer, now takes place in a single step after the completion of the modification. All of the necessary design and quality functions continue to be performed, including transmittal of as-built drawings to Project Engineering for review and acceptance.

7. Documentation and traceability of inspection records for supports that have had modifications are the responsibility of Pullman's QA/QC Department. The pre-inspection field engineer is neither required nor expected to track through these documents during the normal course of his work, nor is there any reason for him to do so. That a specific engineer could not follow the necessary paperwork in an area for which he did not have responsibility is of little consequence as long as the documentation is acceptable and understandable to those who do have the responsibility. A history for any given hanger is maintained in either the Pullman QA vault or the PGandE QC vault.

GAP #180, 181, and 182, Petition at 6-7.

It is alleged that:

On December 28, 1983, Pullman modified installation procedure ESD-223 -- which also provides the acceptance criteria for QC inspectors -- by adding the following provision: "D. For existing installations, welding which was performed but was not required as part of the design is acceptable . . ." (citing ESD-223, "Installation and Inspection of Pipe Supports, "at I, V and 46.) This practice can create unaccounted residual stress on the corresponding pipe support. (citing 2/27/84 Anon. Aff. at 4.)

On December 28, 1983, Pullman also amended ESD-223 with the following provision: "E. For existing installations, welding which was not performed but was required as part of the design is acceptable." (citing ESD-223 at I, V, and 46.) This waiver suggests that faulty welds also would be acceptble (sic), since they could be sacrificed entirely. In other words, anything that does (or does not) exist is acceptable. This procedure revision suggests that quality assurance standards are not just deteriorating; they have collapsed. ESD-223 governs safety-related pipe hangers throughout the plant.

Both amendments were made with the full knowledge of PG&E, pursuant to a December 9, 1983 meeting between Pullman and PG&E. (citing ESD-223 at 11.) The excuse offered for accepting these deviations from design was that through "as-built" drawings, further engineering analysis could determine whether the original design requirements were necessary. (citing ESD-223 at 46.) The excuse cannot wash. Valid QC inspection criteria are one mandatory step among many required for a minimum quality assurance program. They should not be sacrificed because of another independently-required safeguard. Second, the as-built reviews themselves are of questionable reliability. (citing GAP 3/1/84 Petition at 19, Item 216.)

8. These three allegations arise out of a misunderstanding of a December 1983 revision to Pullman procedure ESD-223. The revision resulted from a series of minor variations in welds that had been discovered during pre-inspection of existing pipe supports prior to their release for modifications which were required by the Corrective Action Program.

Undersized fillet welds, incomplete fillet welds, and minor weld defects were observed on existing pipe supports. PGandE Engineering reviewed the effect of such variations on the safety of existing supports and, consistent with design and licensing requirements, provided disposition for the existing welds referenced in the Minor Variation Reports.

9. Contrary to the implication of the allegations, the quality review of existing welds was not sacrificed by the procedural change but remained a requirement of the program. In its approval of the proposed procedure, PGandE specifically required that:

> "1. Undersize, oversize, or incomplete fillet welds shall be as-built, provided that weld quality meets the requirements of ESD-223, paragraph 6.8.2.4 B, C, and D." (Emphasis added).

Paragraph 6.8.2.4 B requires that:

> "B. The final surface of all welds shall be substantially free of sharp surface irregularities, excess surface slag, slag inclusions, and shall have a good workmanship appearance. Excessive surface irregularities may be removed by chipping or grinding provided the weld size specified on the support is maintained."

10. Contrary to GAP #181, the quality assurance program remains in effect for all welds. As discussed in the response to GAP #174 and 295, the February 15, 1984 revision to the pre-inspection program does not eliminate weld quality inspection, but merely shifts the time of inspection of existing welds from pre-inspection to after installation of the modification. At such time, all new and existing welds that

have been "red-lined" by the pre-inspection engineer or reworked are subject to quality control inspection for acceptability according to the same criteria.

11. In GAP #180 and 181, reference to the as-built process as part of the existing weld review program has been conveniently omitted by the alleger. Where welding which was not required by the existing design drawing has been performed on existing supports, or where required welding was not performed, the field engineer identifies the items for rework or indicates such discrepancies on the as-built drawings to ensure that each pre-existing discrepancy will be individually evaluated and accepted. After completion of the construction, QC confirms the accuracy of the as-built drawing by inspecting the completed support against the drawing.

12. All as-built drawings are transmitted to Project Engineering for review. Engineering reviews the as-builts and verifies compatibility with existing calculations or performs new calculations, as required. If compliance to design criteria is not demonstrated by calculation, appropriate corrective action, including the issuance of a modified support design or rewelding, is taken. Therefore, the design/construction process continues to ensure that the as-built configuration is accurately depicted on drawings, qualified by calculation, and acceptable. This entire process is controlled by procedure and documented.

13. With regard to residual stress in pipe supports, as alleged in GAP #180, such stresses that may be caused by overwelding are not a significant factor. Residual stresses are generally local and self-relieving, and exist in all welded construction and in many steel-based materials. The piping supports are constructed, primarily, of light and medium thickness plain carbon steel, such as ASTM A-36, steel plates and shapes. The supports are generally not highly restrained. ASTM A-36 is a ductile material with excellent weldability characteristics and is not subject to failure from residual welding stresses as much as are high-strength steels when subject to high restraint. The design codes take residual stresses into consideration in the specifications of load combinations and allowable stresses.

NRC Allegation #1310

Allegation Description:

Guidelines of 1/24/84 and 2/15/84 prevented QC reports on existing work which was defined as anything before 10/82.

The interim revisions effected as the result of the February 15, 1984 memorandum did eliminate inspection by QC inspectors prior to rework or redlining. Old work, however, remained subject to QC report, as required, at the time of as-built review. This subject is also discussed in response to NRC Allegation Nos. 1242, 1304, and 1324.

NRC Allegation #1311

Allegation Description:

Shims and hangers that had seam welds of no structural value were bought off because they were on "old work".

All shims and hangers that had seam welds were reviewed for engineering acceptability. Their acceptance was based upon their ability to satisfy design and licensing requirements and not whether they were "new" or "old" work.

NRC Allegation #1312

Allegation Description:

We could not reliably determine whether work was "old" or "new" because Pullman's records conflicted over what had or had not been accepted by 10/82.

The February 15, 1984 memorandum altered preinspection for supports having unmodified portions with a latest QC acceptance prior to October 1, 1982. "Existing work" is there defined as "[t]he unmodified portion" of those supports.

Full documentation for all work on any hanger existing (old) or new is maintained in either the Pullman QA vault or PGandE QC vault. From such records, it can be determined whether any support had been accepted prior to October 1982.

The subject of this allegation was previously addressed in response to GAP #174 and #295, paragraph 7, submitted in PGandE letter DCL-84-166 dated April 30, 1984. The previous allegations and responses are attached hereto.

GAP #174 and #295, Petition at 5 and 40, respectively.

It is alleged that:

A February 21, 1984 PG&E memorandum institutionalized the above violation by stripping Pullman QC inspectors of the organizational freedom to apply corrective action for weld symbol deficiencies on previously accepted work. That authority was reserved for PG&E construction department preinspection field engineers. (citing 2/26/84 Anon. Aff. at 11.)

Until February 15, 1984, PG&E preinspection field engineers did not have the organizational freedom to look at any work already accepted, regardless of deficiencies. To illustrate, they were instructed not to look at any existing welds already accepted by Pullman. One current engineer explained what they had to ignore: "The paperwork was so sloppy, however, that I could not tell when a weld had been accepted, or under what revision of the installation procedure, or under what acceptance criteria." (citing 2/27/84 Anon. Aff. at 6.)

1. The above two allegations relate to a February 15, 1984 memorandum (there was no February 21 memorandum) signed by D. A. Rockwell, which reallocated responsibilities relating to, among other things, the examination of previously accepted work in conjunction with the implementation of design changes. Procedures covering the reinspection of such work were in place at all times.

2. When a pipe support design modification is received, a pre-inspection is performed to determine the constructibility of the change. Prior to February 15, 1984, each pre-inspection activity was performed by a pre-inspection field engineer and a QC inspector. The primary assignment of the pre-inspection field engineer was to check the constructibility of the design modification, i.e., could it be installed

as shown and where shown, and to recommend solutions if construction problems existed. He could also note the differences between the drawing and the existing installation. To perform the constructibility review, the pre-inspection field engineer was issued only the latest revision of the hanger drawing. The pre-inspection engineer was not responsible for conducting final quality control inspections of previously accepted work, and pre-inspection was not used as a substitute for the required QC inspections.

3. Prior to rework or modification, the QC inspector was assigned to inspect all existing welds on the supports to be modified against the revised design drawing and to identify any discrepancies between the existing welds and/or symbols and ESD-223 acceptance criteria.

4. After all work was completed and the new as-built drawings prepared, the QC inspector inspected the newly modified support to ensure that it complied with acceptance criteria and the new as-built drawing. After acceptance by QC, the as-built drawing was transmitted to PGandE Project Engineering for final review and acceptance of the as-built design.

5. The pre-inspection program and associated responsibilities were revised by the February 15, 1984 memorandum to more efficiently utilize available manpower without adversely impacting plant quality. The revised program eliminated QC participation in the pre-inspection process and clarified all pre-inspection responsibilities of the

pre-inspection field engineer, including the "red-lining" of existing welds and/or symbols which may not have been accurately depicted on the revised design drawing.

6. The QC inspection, including review of all new work, all rework, and all items "red-lined" by the pre-inspection field engineer, now takes place in a single step after the completion of the modification. All of the necessary design and quality functions continue to be performed, including transmittal of as-built drawings to Project Engineering for review and acceptance.

7. Documentation and traceability of inspection records for supports that have had modifications are the responsibility of Pullman's QA/QC Department. The pre-inspection field engineer is neither required nor expected to track through these documents during the normal course of his work, nor is there any reason for him to do so. That a specific engineer could not follow the necessary paperwork in an area for which he did not have responsibility is of little consequence as long as the documentation is acceptable and understandable to those who do have the responsibility. A history for any given hanger is maintained in either the Pullman QA vault or the PGandE QC vault.

NRC Allegation #1313

Allegation Description:

The 1/24/84 and 2/15/84 policy was used to block hardware problems from being redlined onto the as-built drawings.

The interim revisions emanating from the February 15, 1984 memorandum did not block hardware problems from being redlined. Any hardware problems that were initially identified at the time of reinspection of existing work received engineering evaluation for acceptability for safety and design purpose. If acceptable, the item was included on the redline. If not, rework was required.

While the scope of reinspection was modified by the revisions, as discussed in the response to NRC Allegations Nos. 1308 and 1309, the modification was based upon PGandE Engineering review and analysis.

NRC Allegation #1314

Allegation Description:

Frequent deficiencies on drawings from inconsistent and inaccurate weld symbols. PGandE's response to NRC that this was resolved thru improved training is inaccurate.

This allegation lacks substance. The subject of the consistency and adequacy of welding symbols has been fully addressed in response to Allegation III-30 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegation and response are included following the response to NRC Allegation #1245 above. Without further details, PGandE is unable to provide an additional response.

NRC Allegation #1315

Allegation Description:

New revisions of drawings were sent directly to the field before being processed at document control.

This allegation lacks sufficient specifics to permit a detailed response.

However, it appears similar to the issue discussed in response to NRC Allegation #0904.

NRC Allegation #1317

Allegation Description:

Management was not interested in resolving problems we identified and when we raised problems to supervisors they stopped there.

PGandE management and management of its contractors were, and are, highly interested in the resolution of real problems; the necessary procedures are in place to facilitate this activity. However, issues that were shown not to be "real problems" did not warrant further effort, and review of these issues was terminated in accordance with applicable procedures.

NRC Allegation #1318

Allegation Description:

Management was ignorant of the codes, e.g. Appendix B.

It is hard to believe that any individual on site who was involved with, and needed to know about, a specific code could be considered "ignorant" of such codes. There may be cases where individuals cannot recite, from memory, the details of a specific code in use, but there are sufficient copies of the pertinent documents readily available for review and use by all parties requiring them. This issue has been raised repeatedly by allegers and in each and every case where specifics have been alleged, investigation has shown that the individual in question had sufficient knowledge of the appropriate procedures to adequately perform assigned functions.

NRC Allegation #1319

Allegation Description:

Memoranda guiding work conflicted with one another.

The possibility always exists that memoranda clarifying how work is to be conducted may conflict. When such a situation arises, it is the duty of an individual discovering an apparent conflict to bring the issue to the attention of their supervisor and request further clarification.

NRC Allegation #1320

Allegation Description:

Conflicting organizational charts created an unclear chain of command.

PGandE is not aware of any "conflicting organizational charts." Each individual knows to whom he reports each day and who signs his timecard. Each QA program includes an organization chart for the respective organization which shows the separation of functions and responsibilities.

NRC Allegation #1321

Allegation Description:

Informal communications allowed significant memoranda to bypass the document control center.

Procedures are in-place to ensure that copies of appropriate documents are forwarded to the Document Control Center and distributed in a controlled manner. Informal communications, by their very nature, do not go through the process and there is no requirement that they do so. Documents considered to have a potentially "significant" impact on design and construction activities are handled in a more formal manner and, where necessary, are forwarded to and processed by Document Control. PGandE knows of no formal or informal communications containing "significant" information which were permitted to bypass the Document Control Center.

NRC Allegation #1322

Allegation Description:

Management refused to help resolve the problem of conflicting memoranda.

This allegation appears to be related to Allegation Nos. 1317 and 1319. Management is, and always has been, responsive to individuals raising valid concerns. In the areas of conflicting memoranda, a concerned or confused individual would only have to make the situation known through established channels to receive the necessary clarification.

NRC Allegation #1324

Allegation Description:

Undersize welds found on pre-inspected, accepted work. Management instructed me not to reinspect.

What may appear to be an undersize weld by current standards may exist on preinspected, accepted work, as alleged. An engineering determination was made as to the acceptability of such welds for safety and design purposes. While preinspect engineers and QC inspectors were instructed that they did not have to reinspect such existing welds, they were also informed that if they observed any questionable indications, they should document such observations in the hanger packages.

NRC Allegations #1333 and #1334

Allegation #1333 Description:

No one checked for additional bad baseplates that I know of. Many more baseplates may have the same torquing deficiency.

Allegation #1334 Description:

I pulled a shim out from under a baseplate and reported it to Pullman. A grouting crew came and grouted the support without the shim in place. The crew should have checked the shim first.

These allegations apparently relate to support number 1049-108 SL and to Pullman DR 5259. The installation of the base plate for this support required shims, the torquing of the anchor bolts against the shims, and the subsequent grouting under the baseplate. Pullman installed the support and the required shims and torqued the bolts; activities were witnessed, inspected, and documented by Pullman QC inspectors. Subsequently, a Foley crew performed the grouting and, as part of its activity, was required to check that the baseplate was secure before installing the grout.

A Foley worker reported to the Pullman QA/QC manager that a shim had been pulled out from under the baseplate of support number 1049-108 SL prior to installation of the grout. This matter was identified by Pullman on DR 5259 and was dispositioned by resetting the anchors and torquing the six bolts in accordance with ESD 223.

This matter was also investigated by Foley because a question was raised at the time of the placement of the grout whether the correct tools had been used

to install the grout. On investigation, it was determined that after placement of grout under 80% of the baseplate, a void had been observed behind the particular shim. The shim was removed, with the load of the baseplate being supported by the installed grout. The remainder of the grout was then placed.

Contrary to the implication of these allegations, the baseplate installation was not faulty, but was performed in an acceptable manner in accordance with procedures. As a result of the occurrence, however, Foley Procedure QCPC-10 was revised to clarify grouting and inspection requirements to remove any future question in this regard.

NRC Allegations #1339 and 1340

Allegation #1339 Description:

The September 6, 1983 memorandum concerning verification of line numbers was not implemented in practice.

Allegation #1340 Description:

PGandE issues conflicting memorandum. August 10, 1983 memo instructed Pullman not to remove pipe hangar insulation when September 6, 1983 memo told Pullman to verify line numbers. Neither memo has a control number.

These allegations are without merit. The September 6, 1983 memorandum (Attachment A) which is referenced in this allegation was the corrective action taken to disposition NCR-DCl-83-RM-N005 (Attachment B). That NCR had been written because a hanger had been installed on the wrong line during construction. The September 6, 1983 memorandum was an exhortation that line numbers should be verified "during preinspection and construction activities." (Emphasis added). As noted on Page 2 of the NCR, "[t]his Nonconformance represents an isolated instance. Existing programs and procedures provide adequate assurance for correct performance of Construction activities."

The August 10, 1983 memorandum (Attachment C) did not conflict with the September 6, 1983 memorandum. The August 10, 1983 memorandum said that insulation need not be removed if the hanger modification does not involve an insulated portion. The memorandum has nothing to do with line verification as alleged.

The only requirement for control numbers on correspondence is an administrative requirement and not a quality requirement. Both memoranda, however, appear to have control numbers, contrary to the allegation.

COPY

P. O. Box 117
Avila Beach, California 93424
(805) 595-2324

September 6, 1983

Pullman Power Products
P. O. Box 356
Avila Beach, California 93424

Attention: Paul Stieger

Diablo Canyon Project
Specification #8711
Verifying Line Numbers
NCR 83RM N005

Dear Mr. Stieger:

This memo is to re-emphasize the importance of verifying line numbers during pre-inspection and construction activities. The locating of pipe supports should be by line number as well as by the location plan. This will help to ensure that supports are installed at the proper location and on the correct line. In the event a line is not labeled, the nearest valve can usually be used to determine the line designation.

Sincerely,

D. A. Rockwell
Project Field Engineer

Response required: No

DCC 6492

Quality Assurance
QA 2M6 REV. 6/80

NONCONFORMANCE REPORT

1 IDENTIFICATION: Plant/Site DC1 | Year 83 | Resp. Dept. RM | Number N005 | Sheet 1 of 2

2 Item or Activity: Pipe Support #1-163R | 3 Reference Requirements: Spec. 8711

4 Description: See Page 2

5 ORIGINATED: Department: Mechanical | Date: 9/1/83 | By: D.A. Rockwell | Distribution Information Copies - See 15 Below

6 Cause: See Page 2

7 Resolution: See Page 2

8 Corrective Action to Prevent Recurrence: See Page 2

9 SCHEDULED COMPLETION | Resolution Date: 9/16/83 | Verification Completion Date: 9/16/83

INFORMATION ONLY

10 REPORTABILITY REVIEWED UNDER: ☐ 10CFR20 ☐ 10CFR21 ☐ 10CFR50.36 ☐ 10CFR50.55 (e) ☐ 10CFR70 ☐ 10CFR73 ☐ OTHER

REPORTABLE? ☐ YES ☒ NO ☐ TRG DECISION SPLIT / REVIEW REFERRED TO:

BASIS FOR ☐ REPORTING ☒ NOT REPORTING: Based on Tech. Spec. item 6.9.1.13.C, a reduction in degree of redundancy provided in reactor protection systems, or engineered safeguard feature systems, does not exist.

MANAGER, QUALITY ASSURANCE ☐ N/A

	Applicable Time Requirement	Method	Time	Notified By	Date	Time
INITIAL REPORT:						
ACTUAL REPORT:	By	Date / /		Date / /		
FOLLOW-UP REPORT	☐ N/A ☐ REPORT REQUIRED WITHIN ____	ACTUAL REPORT:	By	Date / /		

OTHER AGENCIES REQUIRING NOTIFICATION OR REPORTS:

11 ADDITIONAL REMARKS: This NCR supercedes MVR M-4546

12 APPROVED

		Date		Date
Group Chairman		09/02/83		09/02/83
Quality Assurance		09/02/83		/ /
Other Representative		09/02/83	PSRC Review ☐ N/A	/ /

13 Resp. Dept.

RESOLUTION COMPLETED	Approved By	10/4/83	CORRECTIVE ACTION COMPLETED	Approved By	10/4/83
INSPECTION ☐ N/A	By	10/4/83	INSPECTION ☒ N/A	Approved By	/ /

14 VERIFICATION BY QUALITY ASSURANCE: All resolution, corrective action, notification and reporting are complete (See Note Page 2)

Date / /

DISTRIBUTION (Other Departments to receive information copy when originated - check below)

15

- ☐ Authorized Inspector (for ASME items)
- ☐ Nuclear Power Generation
- ☒ Engineering GD M&NE
- ☒ Station Construction
- ☒ Plant Mgr. and / or Plant Supt.
- ☐ Engineering Research
- ☒ Quality Assurance
- ☐ Safety Health and Claims
- ☐ Security
- ☐ Materials
- ☒ Contractor PPP
- ☒ Other Site QA

383

NONCONFORMANCE REPORT

DC1-83-RM-N005

DESCRIPTION:

Pipe Support #1-163R Revision 2, designed for initial installation on feedwater line 1-K16-573-4", was inadvertently installed on line 1-K16-476-4". The 10" location dimension for pipe centerline on drawing corresponds with field location of line #476. The two lines are in a parallel run in this area with line #573 approximately 6" to 8" above line #476. This discrepancy was identified during an on-site engineering pipe stress walkdown.

There were no line identification markings in this area. Approximately 75' away, and in another room, the line number is identified.

Revision 3 of Support 1-163R was issued on 8/13/83, no field work was required. Drawing was issued to Pullman Power Products and stamped E.I.A. (Existing Installation Acceptable). This Revision also included the incorrect location dimension.

CAUSE:

1) Pipe Support Design Drawing #1-163R Revision 2 had an incorrect concrete-to-pipe center line location dimension.

2) PTGC and Pullman Field Engineers did not verify line number, correctly identified on the Design Drawing, with field identification markings prior to installation and final acceptance.

RESOLUTION:

Rework Support in accordance with Hanger Drawing 1-163R Revision 3 and design implementation sketch provided by on-site engineering.

CORRECTIVE ACTION TO PREVENT RECURRENCE:

This Nonconfromance represents an isolated instance. Existing programs and procedures provide adequate assurance for correct performance of Construction activities.

General Construction shall re-emphasize to all PTGC and Pullman Pipe Support Engineers the importance of verifying line numbers during pre-inspect and construction.

19. Verification

Support 1-163R has been installed on line 573. It was inspected and accepted by Pullman 9-14-83. Memo's (attached) were sent to Pullman and PTGC pipe support engineers reminding them to check correct line numbers in the field. Piping analysis 2-119 confirms Support 1-163R is

PCD #003757

REV 8/70

G and E
MEMORANDUM

Date August 10, 1983

P. Steiger/K. Karner Location DCPP Ext.

BR Tinkle/G. Thomas Location DCPP Ext. 3109

SUBJECT Insulation Removal File No.

ATTN: Skip Cornish, Bob Oldenkamp, Dick McGrew

For hangers which have a portion of the hanger or pipe attachments covered by insulation, it is not necessary to remove this insulation unless the modification to the hanger involves the portion which is insulated. The previous as-built/process sheet will be used to provide information for the inacessible portion of the hanger (THIS ASSUMES THAT THIS PORTION OF THE HANGER WAS PREVIOUSLY QC/QA ACCEPTED).

BRTinkle 8/10/83

[signature]
8/11/83

cc: K. Palmer
N. Gaudiuso
D. Wells
K. Bell
R. Sizemore
P. Werts

REPLY Date

File
QA
Fledderman
Oldenkamp
Henderson
Kapsalis
Reltehan
Machon
Farall
Mabry

REPLY BY: Received - Julie Fry

P G and E EXT. NO.

INSTRUCTIONS – REMOVE YELLOW COPY AND SEND WHITE AND PINK COPIES WITH CARBON INTACT. WHITE COPY WILL BE RETURNED WITH REPLY. REMOVE SET FROM PAD BEFORE USING

NRC Allegation #1341

Allegation Description:

PGandE changed design by memorandum. Large pipe suppports in both units were deleted with the only reference on the hanger package. It was never marked on the as-build drawings for review.

Although hangers were modified to meet field conditions, the completed hanger was always as-built to reflect the as-built condition regardless of whether the hanger was simply modified or totally deleted. In the case of deleted hangers, an as-built was sent to Engineering stating "Hanger deleted." The as-built process was explained in response to Allegation III-63 in PGandE Letter DCL-84-243 dated June 29, 1984, a copy of which is attached.

III-63

It is alleged that:

Another generic failure at Pullman that I think has seriously compromised the quality of Pullman's work is the lack of effective drawing control, and therfore [sic] inadequate control of the design of the plant. The drawings issued to the field for work often needed modifications that were outside the tolerances allowed by Pullman's procedures, the ESD's. To accomplish these design changes, a system called "Quick Fix" - later changed in Unit 1 to Pipe Support Design Tolerance Clarification - was instituted. The Quick Fix form is filled in by a Pullman field engineer and then cosigned by a Bechtel field engineer. Thus the quick fix was a change of design made in the field. The basis for these design changes was strictly a matter of the engineering judgement of the field engineers as to what seemed like it would work. There was no requirement for any load or stress calculations.

The situation is made worse by the manner in which Quick Fixes are often prepared. Often they were hand drawn under poor conditions and were in many cases impossible to interpret. The Quick Fix program was designed to expedite construction, and therefore there was pressure to write Quick Fixes hastily.

Practically every drawing issued would require at least one Quick Fix, and I have seen as many as thirty-five Quick Fixes for a single hanger. This can make interpretation very hard, because several Quick Fixes could address the same item and describe different solutions. Some would supersede and void portions of the drawing or of other Quick Fixes, but it was difficult or, at times, impossible to clearly understand what was intended.

At times, a complete redesign occurred thorugh the use of Quick Fixes. The Quick Fix became the design, but they were not controlled nor were they stamped as approved for construction as the original drawing was required to be indicating that they were controlled copies, ready for use in construction.

Presumably, the completed work was submitted to PG&E for reanalysis. However, because of the often confusing nature of Quick Fixes, and the lack of control, I doubt that the drawings submitted to PG&E accurately reflect what exists in the field.

I feel that considering the conditions and pressures that we are [sic] required to work under, anything less than a clear and precise drawing to work from is bound to promote mistakes and faulty workmanship, and to leave the ultimate quality of the installed work as a big question mark. (3/21/84 Anon. Aff., Attachment 9, at 6-8.)

Contrary to the allegation, design modifications which occurred by means of the Pipe Support Design Tolerance Clarification (PSDTC) program were accomplished by use of controlled documents and a controlled process. Regardless of whether the initial design solution to a construction problem was hand-drawn, the final installation was as-built, received QC and QA inspection, and was verified according to procedure by Engineering to ensure that the "front-line" solution met design and licensing criteria.

It is true that there were occasions when the design issued to the field needed modifications which exceeded the limits of the authority granted to Pullman as set forth in its procedures. In such cases, proposed modifications were initiated by the Pullman field engineer and reviewed, approved, and numbered by the PSDTC engineer.

It is true many PSDTCs were hand-drawn; however, hand-drawn drawings were clear and explicit. Mr. Stokes claims that many of these drawings were impossible to interpret; however, the craftsmen had no problem interpreting the drawings and constructing the hangers in accordance with the PSDTCs.

It is also true that some drawings required multiple modifications for a single hanger. However, all PSDTCs that affected a large bore hanger were assembled and transmitted along with the final as-built drawing to San Francisco for final design acceptance. Pursuant to procedure, Pullman field engineers prepared as-built drawings of the hangers based upon all the information contained in the hanger package, including all PSDTCs. The as-built drawing was then verified against the actual as-built condition in the field by Pullman field engineers, and the final as-built drawing was verified by Pullman QC and QA. This ensured that all PSDTCs that affected a large bore hanger were accurately described on the final as-built drawing sent to SFHO for engineering review.

Contrary to the allegation, Pullman effectively controlled PSDTCs and prepared final as-built drawings for small bore hangers. The final drawings were prepared by the Pullman field engineers to ensure that they accurately depicted field conditions. Quality Control then verified in the field that the drawings accurately depicted the field conditions. The Pullman Quality Assurance review group then verified that the final document package contained the original design and all PSDTCs to ensure that each item that required a PSDTC was documented in the final hanger package. The installed hangers received two individual as-built inspections in addition to a final Quality Assurance review to ensure that all design information was recorded. Following all reviews, all necessary load-or-stress calculations were

performed when Project Engineering received the final as-built drawing for final as-built evaluation. The only difference between the small and large bore process was that the final large bore hanger package sent to SFHO for engineering review contained the PSDTCs and the final as-built drawing; whereas, the small bore package sent to OPEG for engineering review contained only the final as-built drawing without the PSDTCs.

Contrary to the implication in the allegation, there was no requirement to stamp the PSDTC as approved for construction because the very existence of the signed-off PSDTC meant that the change was approved for construction.

Mr. Stokes fails to recognize the totality of the PSDTC program which ensures that all changes receive the same level of engineering review and approval as a design originating in San Francisco and continues to focus on his narrow role in the process.

NRC Allegation #1342

Allegation Description:

Final visual inspection of welds could not be performed due to welds being covered over with paint.

There are no known cases where an inspector has been required to or forced to inspect a newly installed weld which has been inadvertently painted prior to the final visual inspection being performed and documented. If a newly installed weld has been painted, it is required that the paint be removed so the required inspection can be properly performed.

Existing welds on previously installed and accepted installations have previously been inspected by QC and therefore were painted. The instructions for inspection of existing welds are specified in ESD 223 and ESD 253. These procedures only require a size verification and the correction of obvious weld discontinuities. Paint removal is not required. If a specific question or concern about any existing weld arises, the paint can be removed to resolve the issue.

NRC Allegations #1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, and 1355

Allegation #1346 Description:

ESD 223 established QA policy that was not reviewed and approved by PGandE QA department prior to use.

Allegation #1347 Description:

Subcontractor supplied hanger assemblies were not inspected.

Allegation #1348 Description:

Pipe hanger assemblies fabricated on site did not receive any in process or final inspection.

Allegation #1349 Description:

No in process inspection of pipe support installation.

Allegation #1350 Description:

Inspectors used unapproved inspection forms.

Allegation #1351 Description:

Weld discrepancies on pipe supports not documented.

Allegation #1352 Description:

No explicit acceptance criteria for pipe supports.

Allegation #1353 Description:

No instructions for recording inspections or what acceptance criteria to use for rupture restraints.

Allegation #1354 Description:

No in process inspection of rupture restraints was performed.

Allegation #1355 Description:

Welders not qualified to weld material thickness on rupture restraints.

These allegations come from a letter of Harold Hudson to Congressman Morris Udall, dated June 9, 1984 (Attachment A, pp. 4-5). The allegations merely restate findings from a 1973 PGandE audit of M. W. Kellogg Company, Audit 73-15 (Attachment B, pp. 3-5). The audit resulted in a complete reinspection of all existing pipe supports and rupture restraints, and the Pullman QA program was revised to resolve the audit findings.

Corrective action was taken at the time of the audit:

> [T]he Project Superintendent has stopped work on the installation of pipe hanger and rupture restraints. He has directed his staff to initiate appropriate corrective actions to resolve all deficiencies and preclude recurrence. (Attachment B, page 1).

Weaknesses in the Pullman internal audit program prior to 1978 have previously been identified and resolved by PGandE (NCR DCO-78-RM-004). These weaknesses had no significant impact as NRC Inspection Report 83-37 concluded:

> Even though the internal audit program, implemented by on-site personnel, (prior to 1978) was determined to be of a marginal quality, a redundant program of comprehensive corporate audits was performed concurrently. Based upon an examination of the findings identified in corporate and internal audits, there did not appear to be any adverse impact on quality-related activities as a result of the inadequate description of the internal auditing program. The inspector concludes that, with both programs operating simultaneously, sufficient records are available to assure the necessary criteria of Appendix B were being audited periodically. This conclusion is based, in part, on the absence of recurring significant audit findings.

The subject matter of these allegations also was previously discussed in responses to NRC Allegations #470, 471, 472, 473, and 474 submitted in PGandE letter DCL-84-155 dated May 29, 1984, and response to H-9 submitted in PGandE letter DCL-84-256 dated July 6, 1984. The previous allegations and responses are attached hereto.

The allegations have been fully addressed, and no further action is required.

16

To: Rep. Morris Udall, Chairman
House Interior and Insular Affairs Committee
Washington, D.C. 20515

Attn: Dr. Henry Myers

From: Harold Hudson

Date: 6-9-84

Subject: Deficiencies in the Nuclear Regulatory Commission Inspection to determine the extent to which Pullman and PG&E had implemented an adequate audit program during startup phase of Pullman work at Diablo Canyon (Report Nos. 50-275/84-16 and 50-323/84-06).

The special, unannounced NRC inspection on April 2-4, 1984, to examine audit records of Pullman Power welding activities, performed during the period of August 1971 through December 1973, does not provide an accurate assessment of the PG&E and Pullman audit programs. There are a number of deficiencies in the report based mainly on the apparent omission of information. The NRC report concluded: "Based upon a review of PG&E and Pullman audits it appears 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. Based upon the above reviews the inspector condludes that:

a. the Pullman audit program met the intent of Safety Guide 28 (June 1972) and ANSI N45.2-1971, in effect during that time period, and, therefore, the intent of Appendix B,

b. the audits appeared to be of reasonable competence and quality, and

c. based upon a sampling of corrective actions it appears that findings were followed up and resolved ina responsible fashion."

There is documented evidence which I believe will show that the NRC conclusions are not an accurate assessment of the Pullman and PG&E Audit Programs during the 1971 to 1973 period.

1. The NRC Report states: "The inspector read through and surveyed the above audits to develop a sense of the audit competency and quality. The audits were performed by Pullman and PG&E to determine compliance with the Pullman Quality Assurance Program (KFP's). The inspector noted that applicable procedures of the QA program related to welding activities were audited: KFP-8 "Process Planning and Control", KFP-12 "Control of Filler Metal", KFP-13 "Postweld Heat Treatment", and KFP-15 "Welding Qualification". Further,

the above audits decmonstrated that Field Process Sheets (travelers) were audited for compliance to KFP-8 (for each field weld the process sheet lists operations such as fit up, weld completion, NDE, and designated holdpoints for QC and the Authorized Nuclear Inspector's inspection and approval)."

What the NRC Inspector apparently failed to recognize was that the Pullman QA program related to welding activities, which were audited by Pullman and PG&E, and surveyed by the NRC Inspector for a sense of audit competency and quality, was not applicable to Pipe Hangers (Supports) and Pipe Rupture Restraints.

a. The NRC Inspector references a PG&E Audit #73-15 (11-29 and 12-19, 1973) but failed to recognize the significance of its findings in relation to the scope of his work. PG&E Audit #73-15 disclosed that in regard to Pipe Hangers (Supports) and Pipe Rupture Restraints, M.W. Kellogg and PG&E's General Construction Dept. departed significantly from the requirements of the Specification and PG&E's QA Manual. "MWK's Quality Assurance Program does not comply with Section 4 of Specification 8711 and (PG&E) Procedure PRP-4. The (PG&E) Mechanical Dept's surveillance program does not comply with Procedure PRC-7". PG&E Audit #73-15 reviewed MWK's Q.A. Manual, with respect to Pipe hangers and restraints, for adequacy and compliance to Spec 8711 and PG&E QA Procedure PRP-4. Audit #73-15 concluded that MWK's approved QA Manual "does not specifically address itself to, nor is it completely applicable to, the control of pipe hangers and restraints." Thus MWK wrote an "Engineering Specification," ESD 223. The intent of ESD 223 was to set forth procedures and instructions to the field QA inspectors, engineers and foremen implementing the policy stated in the QA Manual. Audit #73-15 concluded ESD 223 established QA policy instead of providing instructions on how to implement the policy stated in the Manual. Audit #73-15 also concluded that "The program set forth in ESD 223 does not meet all of the requirements of Section 4 of the Spec. Deficiencies were noted in the areas of document review and control, qualification of special processes and personnel, work procurement control, receipt inspection of material, identification control and status of material, nonconforming material control, inspection and test records and inspection and test plans. Consequently the hanger and restrain QA program is in violation of Procedure PRP-4.

Audit #73-15 would review the receipt, storage and installation of pipe hangers and rupture restraints - and identify numerous major discrepancies (see attached PG&E Audit #73-15).

Audit #73-15 audited PG&E's Resident Mechanical Engineer's surveillance system of the fabricating, furnishing and installing of pipe hangers and rupture restraints, which was performed by the Power Plant Piping Group. PG&E Procedure MFI-2 set forth the Resident's written instructions to personnel in this Group. The audit concluded that "MFI-2 Instructions do not specifically address themselves to the surveillance of pipe hangers and restraints and are not applicable to the inspection of pipe hangers and restraints. The inspection is performing other inspections, however, these inspections are not documented or described in the MFI.

HOH

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 NRC Report conclusion that "it appears that audits of Pullman welding activities were thorough and conducted in accordance with the Pullman QA Program" is not an accurate assessment in regard to Pullman's Pipe Hanger and Pipe Rupture Restraint Programs. The NRC Report conclusion that "audits appear to be of reasonable competence and quality" is not accurate in regard to Pipe Hangers and Pipe Rupture Restraints.

b. A major fallacy in the PG&E audit program in the 1971 to 1973 period was that Pipe Rupture Restraints were audited against PG&E Contract Spec. 8711. PG&E's C.S #8833XR specified the fabrication, erection and Quality Assurance requirements for Pipe Rupture Restraints. Yet PG&E's Audit #73-15 of Rupture Restraints would be against the requirements of C.S. #8711 not C.S. #8833XR. All PG&E audits performed prior to Audit #73-15 were also against C.S. #8711. This leaves the PG&E audit program for Pipe Rupture Restraints indeterminate during this time period. Again the NRC Inspector has not recognized this deficiency in the audit program.

1344

HOH *See Post Script.

c. The NRC Report does not reference a 10-24-73 Pullman Internal Audit, which was the first documented Internal Audit performed specifically on Pipe Rupture Restraints. Per C.S. #8833XR Pullman was scheduled to begin erection of Pipe Rupture Restraints in Unit I on 7-8-72. Yet it would be 16 months before an Internal Audit would be performed on the program. This audit would note discrepancies with weld rod requisition and that some restraints did not have any rod requisitions. Again this audit would reveal

that C.S. #8711 was being used in conjunction with C.S. #8833XR for the installation of restraints.

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 omission of this audit from the NRC Report and the finding revealed by the Audit cast doubts on the NRC conclusion "that audits of Pullmans welding activities were thorough and conducted in accordance with the Pullman QA Program."

d. The first documented Pullman Internal Audit of Pipe Hangers (Supports) was performed on 9-18-73 and is referenced in the NRC Report. The audit report states that the scope of the Audit was "adherence to the Engineering Specifications and Quality Assurance Manual." It would be identified in PG&E Audit #73-15 that Pullman QA Manual (KFP's) did not specifically address or was applicable to Pipe Hangers. The PG&E Audit would also identify that ESD 223 established QA policy instead of providing instructions for the installation of hangers, in essence, on "alternate QA program, which was not submitted to the PG&E Quality Assurance Dept. for review and approval prior to use. 1346

The NRC Report does not address these discrepancies but concludes that "the audits appeared to be of reasonable competence and quality."

e. The NRC Report states "the above audits demonstrated that Field Process Sheets (travelers) were audited for compliance to KFP 8". The NRC Report is misleading in regard to Pipe Hangers (Supports) and Pipe Rupture Restraints. It has already been established that the Pullman QA Manual (KFP's) was not applicable to Pipe Hangers and Pipe Rupture Restraints.

PG&E Audit #73-15, dated 11-29 and 12-19, 1973, identified:

1. Hangers for pipe 2-1/2" and greater:

   a. Subcontractor supplied hanger assemblies were not inspected by QA personnel. 1347

   b. Hanger assemblies fabricated on site do not receive any in process or final inspection. 1348

   c. The installation of hangers received a final inspection, but no inprocess inspections. 1349

d. Inspectors are using inspection forms which they consider necessary but are not controlled by the QA Program. (1350)

e. The conditions of field welds were generally rough and irregular. Some welds specified on the drawings were not made. No discrepancy reports or other documentation authorizing the acceptance of these discrepancies were available. (1351)

f. Inspectors could not furnish any explicit acceptance criteria. (1352)

2. Field run hangers for pipe less than 2-12":

a. All field run pipe hangers are fabricated on site. These hangers do not receive any inprocess or final inspections.

b. The installation of hangers receive a final inspection but no inprocess inspections.

c. The auditor noted rough and irregular welds, undersize and incomplete welds, hangers not in the location specified by the drawings, hangers not fabricated in accordance with approved drawings.

3. Pipe Rupture Restraints: (1353)

a. The method of recording inspections and acceptance criteria are not set forth in an instruction. All inprocess inspections of workmanship and technique required by the AWS Code are not being performed. (1354)

b. Some welders were welding materials of greater thickness than they were qualified for. (1355)

c. Welding was not in complete accordance with the assigned weld procedures.

The Pullman and PG&E Audits of KFP 8 were obviously not applied to Pipe Supports and Pipe Rupture Restraints. Yet the NRC Inspector does not reveal this even after he had reviewed the PG&E Audit #73-15. For the time period being discussed, Pullman would not identify any of the Hanger and Restraint discrepancies listed above. PG&E's onsite General Construction QC group would not identify any of the discrepancies. Not until October/November 1973 (the very end of the time frame

being discussed), when the PG&E Corporate QA Department performed Audit #73-15, would the discrepancies be identified. The NRC Report conclusion 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" is not an accurate assessment regarding Pipe Hangers and Rupture Restraints.

2. The NRC Report concludes: "The Pullman audit program met the intent of Safety Guide 28 (June 1972) and ANSI N45.2-1971, in effect during that time period, and therefore, the intent of Appendix B." There is documented evidence which apparently was not reviewed by the NRC Inspector, which suggest the NRC conclusion about the Pullman Audit Program may not be completely accurate for the August 1971 to December 1973 time period for Piping, Pipe Supports and Pipe Rupture Restraints.

   a. A Pullman Corporate Interoffice Correspondence, dated 11-13-78, from the Senior QA Engineer, concerning Corporate Management Audits, states that "The Diablo Canyon project has been audited extensively only in hardware areas. The entire program has not been evaluated." The same IOC states "In the past, Pullman Power Products did not conduct audits or practices to ASME (Pullman's QA Manual is based on ASME Code Section III, 1971 edition) or 10 CFR 50, but I feel it s very essential to do so now".

   b. A PG&E Corporate Management Audit #80422, dated 6-13-78, indicates that the ANSI standards are not applicable to Pullmans QA Program. Audit #80422 states "ANSI N45.2 states in its forward that it is not applicable to work performed in accordance with the Code (ASME Section III).

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

   d. PG&E Audit #80422 identified that the Pullman Quality Assurance Program is not adequately defined. The ASME Code Section III, 1971, requires that the Quality Assurance Program be documented in detail in a manual consisting of written policies, procedures, and instructions. Pullman Corporate Procedure No. XVIII-I, is presently being used for the performance of management audits of field activities. This procedure implemented QA requirements of the contract but were not identified as part of the program and revisions were not controlled by the program.

   e. PG&E Audit #80422 indicated that PG&E C.S.#8711 and the 1971 ASME Code required a comprehensive system

of planned and periodic audits to be carried out to assure compliance with all aspects of the QA Program. Audit #80422 identified:

> "Procedure KFP-18 states in its scope that it establishes such a system. However, two types of audits, management audits and internal audits, are described. The procedure does not establish the scope of either type of audit and no detailed schedule has been developed to show that all aspects of the program are being audited. Furthermore, audit records at the site do not indicate that all aspects of the program are being audited. Records do not indicate that management audits have been performed on pipe support work (and pipe rupture restraints)." An unofficial, unapproved WON internal audit schedule exists, but it has not been followed consistently and for ESD's appear on th schedule".

In light of the above listed evidence, which would have been in effect during the 1971 to 1973 time frame, the NRC Report conclusion about the Pullman audit program during the 1971 to 1973 period becomes suspect.

The NRC Report reveals that a number of Pullman Internal and Corporate audits were performed as well as PG&E audits, on QA Manual (KFP) procedures related to welding activities. But the QA Manual was applicable to Piping only, not to Pipe Hangers (Supports) or Pipe Rupture Restraints. Therefore the conclusion reached by the NRC Inspection are not applicable to Pipe Hangers and Rupture Restraints. In addition, there is evidence documenting serious deficiencies in the Pullman Corporate and Internal audit program which would suggest noncompliance to 10 CFR 50 Appendix B during the 1971 to 1973 time period.

This letter has presented evidence which indicates that Pullman and PG&E did not implement an adequate audit program for all three major areas of construction, Piping, Pipe Hangers (Supports) and Pipe Rupture Restraints, during the startup phase of Pullman work at Diablo Canyon. Many areas have since been corrected as a result of the Audit Program but only after a repeated history of discrepancies. Areas of inadequate corrective action include:

1. The QA Program Description for Pipe Hangers (Supports) and Pipe Rupture Restraints. See PG&E Audit #73-15 and #80422 and Pullman Internal Audit of 10-24-73. 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. Per the QA Program Description certain sections of the Piping QA Manual apply to Pipe Supports and Rupture Restraints but it does not specify which section for which type of work. The Piping QA Manual is based on ASME Section III, 1971 edition.

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2. Preheating of welds. The Pipe Rupture Restraint Crack Repair Program was the result of inadequate corrective action to poor preheating practices.

3. The Pullman Audit Program. See PG&E letter dated 9-19-73, Quality Assurance Audits (Failure to follow existing and and upgrade Quality Assurance procedures). See PG&E Audit #75-2 and PG&E letter dated 3-25-75 concerning the need for a more comprehensive and extensive internal audit system. See PG&E Audit #80422. 1361

4. QA Documentation for Pipe Support and Pipe Rupture Restraint work. See PG&E Audit #73-15, PG&E NCR # DC1-79-RM-003, PG&E NCR # DC1-78-RM-009 136

There are other areas of inadequate corrective action which would require more research and time to write about.

I hope this information will be of use during your hearings with the NRC.

Sincerely,

Harold O. Hudson

Harold O. Hudson
Former Pullman, QA/QC Inspector
QA Program Internal Auditor,
Lead Auditor and Pipefitter

Post script.
The problem of PG+E auditing Pipe Rupture Restraints to C.S.#8711 extended to 1975. See PG+E Audit # 75.2 and PG+E letter dated 3.25.75. Pipe Rupture Restraints should have been audited to C.S. #8833R, 13
The problem of which contract Spec to work to was not limited to Pullman. PG+E would direct Boston-Berger Metal Products to establish QA requirements to the wrong contract Specification. See PG+E Memorandum, 9-24. and PG+E letter dated 10-24-74, PG+E letter dated 12-23 and PG+E letter dated 1-7-75. HOH

List of Attachments

1. U. S. Nuclear Regulatory Commission, Region V, Report Nos. 50-275/84-16 and 50-323/84-06.
2. PG&E Audit #73-15, Oct. and Nov. 1973.
3. M.W. Kellogg Interoffice Correspondence, 9-18-73, Subject: M.W. Kellogg Internal Audit of Hanger Dept.
4. M.W. Kellogg Interoffice Correspondence, 10-24-73, Subject: Follow up Audit of Hanger Dept. and Audit of Rupture Restraints QA Program.
5. Interoffice Correspondence, 11-13-78. Subject: Upcoming Audit of Diablo Canyon in December.
6. PG&E Audit #80422, 6-13-78. Pullman Power Products QA Program
7. PG&E Letter, 9-19-73, Quality Assurance Audits.
8. PG&E Letter, 3-25-75, Quality Assurance Audits.
9. PG&E Audit #75-2, 2-20,21 and 25, 1975.
10. PG&E NCR # DC1-79-RM-003, 1-24-79
11. PG&E NCR # DC1-78-RM-009, 10-26-78
12. PG&E Memorandum, 9-24-74, To Bostrom-Bergen Metal Products.
13. PG&E letter, 10-24-74, to Bostrom-Bergen Metal Products.
14. PG&E letter, 12-23-74, to Bostrom-Bergen Metal Products
15. PG&E letter, 1-7-75, to Bostrom-Bergen Metal Products.

Audit Serial No. 73-15
Page 1

PACIFIC GAS AND ELECTRIC COMPANY
QUALITY ASSURANCE DEPARTMENT
DIABLO CANYON PROJECT

PIPE HANGERS AND RUPTURE RESTRAINTS
(Specification 8711)

Performed by: D. C. Landes

Date: Oct. and Nov., 1973

Critiqued: Nov. 29 and Dec. 19, 1973

SCOPE

The audit was conducted to verify that the pipe hangers and rupture restraints are fabricated, furnished and erected in accordance with the Specification and the Pacific Gas and Electric Company and M. W. Kellogg Quality Assurance Manuals.

RESULTS AND CONCLUSIONS

The results of this audit were reviewed with the Project Superintendent and his staff in order to (1) discuss the results of this audit, (2) resolve any inadvertent misrepresentations, and (3) to establish a completion date for those items requiring corrective action.

The audit disclosed that M. W. Kellogg (MWK) and the General Construction Department departed significantly from the requirements of the Specification and P G and E's Quality Assurance Manual. MWK's Quality Assurance program does not comply with Section 4 of Specification 8711 and Procedure PRP-4. The Mechanical Department's surveillance program does not comply with Procedure PRC-7.

Accordingly, the Project Superintendent has stopped work on the installation of the pipe hangers and rupture restraints. He has directed his staff to initiate appropriate corrective actions to resolve all deficiencies and preclude recurrence. The Project Superintendent has agreed to formally respond to this audit by January 14, 1974.

Attachment D2

I. ITEM AUDITED

M. W. Kellogg Company Quality Assurance Manual.

Reviewed MWK's Quality Assurance Manual, with respect to the pipe hangers and restraints, for adequacy and compliance to Specification 8711 and QA Procedure PRP-4.

RESULTS

Section 4 of Specification 8711 sets forth the requirements of the standard "Supplementary Specification for Contractor's Quality Assurance Program" included in Procedure PRP-4.

MWK's approved QA Manual complies with Section 4 of the Specification. The Manual, however, does not specifically address itself to, nor is it completely applicable to, the control of pipe hangers and restraints.

Thus, MWK has written an "Engineering Specification," ESD-223, establishing the QA program applicable to the control of the hangers and restraints. As confirmed by R. G. Fink, MWK's Field Quality Assurance Manager, the intent of the "Engineering Specifications" is to set forth procedures and instructions to the field QA inspectors, engineers and foremen implementing the policy stated in the QA Manual. ESD-223 establishes QA policy instead of providing instructions on how to implement the policy stated in the Manual.

Additionally, the program set forth in ESD-223 does not meet all of the requirements of Section 4 of the Specification. Deficiencies were noted in the areas of document review and control, qualification of special processes and personnel, work procurement control, receipt inspection of material, identification control and status of material, nonconforming material control, inspection and test records and inspection and test plans. Consequently, the hanger and restraint QA program is in violation of Procedure PRP-4.

ESD-223 is, in essence, an "alternate QA program" approved by the Resident Mechanical Engineer. Procedure PRP-4, Paragraphs 3.14 and 3.15, requires that such an "alternate QA program" be submitted to the Director, Quality Assurance, for review and approval prior to use. ESD-223 was not submitted to the Quality Assurance Department for review and approval prior to use.

CORRECTIVE ACTION

Initiate a separate QA program, which is in accordance with Specification 8711 and Procedure PRP-4, covering the fabrication, receipt and installation of the pipe hangers and restraints.

Complete discrepancy reports identifying and dispositioning the discrepant items and conditions existing in the work completed to date and initiating steps to preclude recurrence.

Attachment D2

II. ITEM AUDITED

Altius Corporation and Grinnel Company Quality Assurance Manuals.

Altius and Grinnel, subcontractors to MWK, supply fabricated pipe hangers and components. Reviewed these Manuals for compliance to Specification 8711 and Procedure PRP-4.

RESULTS

Altius' QA Manual is in general compliance with Specification 8711 and Procedure PRP-4.

Grinnel's QA Manual was not available on site. Documentation regarding the status of its review and approval was also not available on site.

CORRECTIVE ACTION

Obtain a copy of Grinnel's Manual and determine that it is in accordance with the Specification and PRP-4. Obtain or provide objective evidence, documentation, of P G and E's review and approval.

III. ITEM AUDITED

Receipt, storage and installation of pipe hangers and rupture restraints.

Reviewed the receipt, storage and installation operations and documentation of various hangers.

RESULTS

Selected several hangers and restraints, determined their status, and reviewed the quality records documenting the fabrication, receipt, storage and installation.

Results of the review are:

1. Hangers for pipe 2-1/2" and greater:

   A. Subcontractor-supplied hanger assemblies are inspected by construction forces rather than QA personnel. These receipt inspections are not documented and filed in the QA vault.

   B. Hanger assemblies fabricated on site do not receive any in-process or final inspections.

   C. The installation of hangers receive a final inspection, but no in-process inspections.

   D. Inspectors are using inspection forms which they consider necessary but are not controlled by the QA program.

Attachment D2

E. Two hangers which had been inspected and accepted by MWK were re-inspected. The condition of the field welds were generally rough and irregular. Portions of the welds were less than the 1/4" fillet specified on the drawings; other sections were somewhat oversize and convex. The condition of the shop welds were uniform and smooth; however, the weld size was generally less than the 1/4" fillet specified on the drawings. Also, some welds specified on the drawings were not made; inaccessibility explained why some were omitted, but not others. No discrepancy reports or other documentation authorizing the acceptance of these discrepancies was available.

F. When requested, the inspectors could not furnish any explicit acceptance criteria. This data is not clearly stated in the ANSI Codes or in any P G and E or MWK document.

2. Field run hangers for pipe less than 2-1/2":

A. Receipt inspection and surveillance of raw stock materials is performed and documented by QA inspectors.

B. All field run pipe hangers are fabricated on site. These hangers do not receive any in-process or final inspections.

C. The installation of hangers receive a final inspection, but no in-process inspections.

D. No field run hangers had been inspected at the time of the audit. Various discrepancies were noted by the auditor. Discrepancies noted were: rough and irregular welds, undersize and incomplete welds, hangers not in the location specified by the drawings, hangers not fabricated in accordance with approved drawings and hangers and approved hanger drawings contrary to the P G and E standard design drawing. No discrepancy reports or other documentation authorizing the installation of hangers with these departures was available.

E. Measures providing for the appropriate and timely identification, review, and dispositioning of hangers when they cannot be installed in accordance with the approved drawings are not evident. Construction crews are not required to stop work and obtain appropriate approval when the hanger cannot be installed in accordance with the approved drawings. Instead they are allowed to proceed with the work and rely on the final inspection to detect and resolve any departures.

3. Pipe rupture restraints:

A. MWK's receipt inspection checks for road damage and completeness of material only. Surveillance inspections of stored assemblies is performed by MWK.

B. The P G and E Civil Department provides the inspection and documentation to assure that the procurement requirements have been met. The receiving inspection forms, Form C-35, were on file in the QA vault. Several forms, however, note contingencies where the inspection, verification that the procurement requirements have been met, has not been completed.

These supports are not placed on "hold" or withheld from installation. The Resident's Instructions do not require identification and segregation of non-conforming items. Additionally, the auditor could not locate receiving reports for all the restraints.

C. MWK has not determined, or received a written material release from P G and E stating that the procurement requirements have been met. Unless exempted in writing, Specification 8711 and Procedure PRP-4 require that the contractor inspect company-furnished material for conformance to the purchase documents, specification, drawings, etc.

D. Except for the ultrasonic inspection, MWK documents their inspections on "Marked-up" erection drawings. This documentation takes the form of sign-offs and color coding. The method of recording inspections and acceptance criteria are not set forth in an instruction and was not clear to the auditor. Upon explanation of the system by the inspector, it was still difficult to determine the inspection status. All in-process inspections of workmanship and technique required by the AWS Code are not being performed.

E. Some welders were welding materials of greater thickness than they were qualified.

F. Welding was not in complete accordance with the assigned weld procedures. Several of the non-essential variables had been altered or were not being complied with.

G. Provisions for the installation and inspection of high strength steel bolts are not in accordance with the AISC Code.

CORRECTIVE ACTION

Refer to the corrective actions for Audit Item No. I.

IV. ITEM AUDITED

The Resident Mechanical Engineer's surveillance system of the fabricating, furnishing and installing of the pipe hangers and rupture restraints.

Reviewed the Resident's written instructions and surveillance activities for adequacy and compliance to Procedure PRC-7, "Inspection of Materials and Components During Use and/or Installation."

RESULTS

Surveillance of the receipt and installation of the pipe hangers and rupture restraints is performed by the Power Plant Piping Group. MPI-2 sets forth the Resident's written instructions to personnel in this Group.

MPI-2 Instructions do not specifically address themselves to the surveillance of pipe hangers and restraints. The instructions define the inspector's responsibilities and require him to perform and record specific inspections.

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However, the inspector is not performing any of these inspections; they are not applicable to the inspection of pipe hangers and restraints. The inspector is performing other inspections; however, these inspections are not documented or described in the MFI.

CORRECTIVE ACTION

Issue a written instruction describing the responsibilities and duties of, and the inspections and records required from, the hanger inspector.

V. ITEM AUDITED

Departures from approved drawings.

Reviewed the Contractor and P G and E system for handling discrepancies and departures from the approved drawings for the 2-1/2" and larger pipe hangers.

RESULTS

When a departure is discovered, MWK stops work on the support, completes a discrepancy report (DR), and submits the DR to P G and E for approval. Upon approval, they release the support for completion of work.

Upon receiving MWK's DR, General Construction analyzes the departure and writes its own DR to disposition the discrepancy or initiates a drawing revision to nullify the discrepancy. In the majority of the cases, a drawing revision is initiated. In most instances the concurrence of the Responsible Engineer is documented on a telecon sheet and work proceeds; a revised drawing or mechanical revision sheet is not obtained before proceeding with the work. In other instances, the mechanical revision sheet or revised drawing is received, but all of the signatures required by Procedure PRE-3, Responsible and Supervising Engineers, are not present.

CORRECTIVE ACTION

Document and disposition such departures on a discrepancy report or do not proceed with the work until a properly approved revised drawing or mechanical revision sheet is received on site.

D. C. Landes

D. C. LANDES

DCL:je

cc: PLBussolini
RRFriedrichs
CMMaxfield
GVRichards
MRTresler
File

Attachment D2

NRC Allegation #470

It is alleged that:

3) Actually the problem was worse. In effect there was no formal QA program for pipe supports and pipe rupture restraints. The problem first was identified in a November 1973 audit (Exhibit 5) which conceded that the QA Manual skipped pipe supports and pipe restraints. Instead there was only ESD-223, the installation procedure which the auditor called "in essence, an 'alternate QA program' approved by the Resident Mechanical Engineer, instead of the Director of QA as required. (Id.) (3/22/84 Hudson Aff. at 4.)

281. The deficiencies in Pullman's QA program which are noted in this allegation were reported in the PGandE audit in 1973. Subsequently, Pullman revised its QA program to include pipe supports and rupture restraints, and the revised program was submitted to PGandE's Corporate QA Manager for approval. The program was approved on December 11, 1973. The reinspection was completed and closed out by PGandE on January 15, 1974.

282. All pipe supports and rupture restraints that were installed under the original ESD 223 were reinspected and were replaced or repaired, if necessary, or accepted. Each was properly documented in accordance with the new program.

283. This allegation raises nothing new, and since the condition was corrected, no further corrective action is necessary.

NRC Allegation #471

It is alleged that:

4) Although Pullman [sic] identified many deficiencies of ESD 223 in 1973, the company did not learn its lesson. The NSC audit repeated similar findings in 1977. (Hudson Aff. at 5.)

284. The 1973 PGandE QA audit of the M. W. Kellogg Quality Assurance Program, which is actually referred to in this allegation, identified that pipe support and rupture restraint work was not covered under the main program. This work was being conducted under what was considered by the auditor as an "alternate QA program" under the provisions of ESD 223. The auditor evaluated ESD 223 as a QA program and identified eight programmatic deficiencies. In resolving this audit, Kellogg developed the Pipe Support Quality Assurance Manual for pipe support and rupture restraint work. This manual was approved by PGandE on December 11, 1973. A review of the NSC audit reveals that there were no programmatic findings in these eight areas except for two items in the area of document control. The area of document control identified was that there was no procedure for control of ESDs or Special Quality Assurance Procedures. Contrary to the allegation, as a result of the various audits over time, M. W. Kellogg did "learn its lesson" and improved its QA program on pipe supports and rupture restraints.

285. No further action is required.

NRC Allegation #472

It is alleged that:

5) A January 10, 1977 memo from Pullman QA manager J. Runyan explained another major point: The pre-December 1973 pipe supports were installed "prior to implementing the inspection program" (Exhibit 6) (Hudson Aff. at 5.)

286. The January 10, 1977, memorandum referred to in the allegation simply acknowledges the previously mentioned fact about deficiencies in the Pullman QA program four years before in 1973. The memorandum, however, also lists the steps that were "taken" to ensure that the requirements of the new ESD 223 were met. The memorandum concludes, "It is my opinion that this program will insure [sic] the present installations are, as a whole, meeting the requirements of ESD 223." Rather than show the continuous deficiencies, the memorandum demonstrates compliance.

287. No further corrective action is required.

NRC Allegation #473 and #474

It is alleged that:

6) A November 13, 1978 memorandum from Pullman's Senior QA Engineer R. J. Manning (Exhibit 7) conceded that "in the past" Pullman "did not conduct audits or practices to ASME or 10 CFR 50, but I feel it very essential to do so now." As demonstrated by my own personal experience, the author's advice was ignored. From my reviews, I know that the early audits which existed were well-intentioned, but crude, uncontrolled and informal. They were too sloppy to constitute a minimal program. For example, a 1973 audit referenced conclusions about pipe rupture restraints to the contract for pipe supports, which didn't apply to the work in question. (Exhibits, Supra.) (3/22/84 Hudson Aff. at 5.)

7) Until at least November 1978, some parts of the QA program had never been audited. As revealed by Mr. Manning, "The Diablo Canyon program has been audited extensively only in hardware areas. The entire program has not been evaluated." (Exhibit 7) (Hudson Aff. at 5.)

288. Contrary to Allegation #473, Pullman did audit the Diablo Canyon Project to the requirements of 10 CFR 50 or ASME. In order to qualify for NA and NPT stamps from ASME, Pullman was required to commit to and did audit its projects according to the requirements of ASME. Consistent with such requirements, Pullman established its QA Manual and QA procedures which required audits to procedures which satisfied ASME. Management audits of the Diablo Canyon Project were conducted by Pullman on a regular basis beginning in 1972 (Attachment 16) in addition to internal audits. Those audits were conducted to ensure compliance with Specifications 8711 and 8833XR. While neither specification specifically references 10 CFR 50, each specifies the criteria to be met by Pullman's QA program. These criteria, in their substance, address the 18 elements of 10 CFR 50, Appendix B. The 1973 PGandE audit specifically found, "M. W. Kellog's [Pullman's] QA Manual complies with Section 4 [Quality Requirements] of the Specification." The quality requirements for Specifications 8711 and 8833XR are identical.

289. J. R. Manning's memorandum followed the NSC audit of Pullman in 1977 and can be seen as an exhortation that the prospective corporate audit of the project be in the form of 10 CFR 50 or ASME to guarantee that the Pullman QA program satisfies third party review by NRC or ASME. The NRC Staff in its review of the Pullman corporate audit

program determined that, while the elements of the QA program were general, there was "a history of Quality Assurance Program Audits based on checklists following 10 CFR 50 Appendix B criteria" (NRC Inspection Report No. 50-275/83-37 at 7-8).

290. Contrary to the allegation, it was a PGandE audit, not a Pullman audit, which addressed both piping and rupture restraints. As discussed above, the QA requirements for Specifications B833 and B711 are the same.

291. Contrary to the implication of Allegation #474, the Pullman Diablo Canyon QA program was audited both in hardware and software areas prior to 1978. Subsequent to a 1978 PGandE audit of a Pullman audit (PGandE Audit No. B0422), extensive additional effort was expended just in the hardware area of the Pullman program because of PGandE findings. This additional audit effort is what is referred to by Mr. Manning in his memorandum. PGandE found no reason to require an additional audit effort in the program portion of the Pullman QA program.

292. Pullman's QA program has been audited since the contract began to the substantitive requirements of 10 CFR 50 and ASME. Deficiencies found by the audits by Pullman or PGandE have been corrected, and no further corrective action is required.

H-9

It is alleged that:

On 1-14-74, Engineering Specification Diablo (ESD) 243, Pipe Rupture Restraints, was issued by Kellogg and on 2-1-74 a revision to the ESD was approved and published. Most of the ESD requirements were copied from PG&E Spec 8833XR and the AWS Code D1.0-69. The 2-1-74 revision to ESD 243 required all Rupture Restraint welds to be made with weld procedure Code 7/8, preheat of 50 F minimum with welder verification only, no preheat check by QA other than periodic monitoring during welder audits, and no documentation of preheat of interpass temperature. Visual inspection of fit up and final inspection with ultrasonic examination of all full penetration welds was required. For over a year these were the only QA/QC requirements for welding on Rupture Restraints. (6/5/84 Hudson Aff. at 11.)

This allegation was previously addressed in PGandE's letter DCL-84-239, dated June 26, 1984. Although the design and construction of Diablo Canyon began in the late 1960s, it wasn't until later that the rupture restraint concept was introduced and retrofitted to the plant. Rupture restraints are similar to, but different from, pipe supports and building frames. Diablo Canyon was on the frontier, so to speak, of an advancing nuclear plant concept. The existence of problems could have been, and was, anticipated, but the specific problems and specific countermeasures could not have been predicted in advance.

The procedures for the welding QA/QC program for rupture restraints initially used the pipe support activity as a role model. Although the original requirements were thought to be appropriate at the time, the rupture restraint activities continued to evolve over time.

Mr. Hudson has chronicled the discovery of several problems and their proper resolution through the QA/QC programs of Pullman and PGandE.

The installation requirements were detailed in ESD 243. This was approved by Pullman and PGandE.

NRC Allegations #1360 and #1361

Allegation #1360 Description:

Inadequate corrective action taken with regard to need for expanded Pullman audit program.

Allegation #1361 Description:

Inadequate corrective action taken with regard to deficient QA documentation for pipe supports and rupture restraints.

This subject matter was previously addressed in response to NRC Allegation Nos. 470-474 submitted in PGandE letter DCL-84-195 dated May 29, 1984. The previous allegations and responses are attached hereto.

These two allegations also appear to be derived from the letter of Harold Hudson to Congressman Morris Udall dated June 9, 1984 (Attachment A to Response to Allegation 1346-1355, pages 7-8). The allegations merely recount deficiencies discovered by PGandE while the job was in progress.

Those weaknesses in the Pullman internal audit program prior to 1978 have previously been identified and resolved by PGandE (NCR DCO-78-RM-004). The weaknesses had no significant impact as NRC Inspection Report 83-37 concluded:

> Even though the internal audit program, implemented by on-site personnel, (prior to 1978) was determined to be of a marginal quality, a redundant program of comprehensive corporate audits was performed concurrently. Based upon an examination of the findings identified in corporate and internal audits, there did not appear to be any adverse impact on quality-related activities as a result of the inadequate description of the internal auditing program. The inspector concludes that, with both programs operating simultaneously, sufficient records are available to assure

the necessary criteria of Appendix B were being audited periodically. This conclusion is based, in part, on the absence of recurring significant audit findings.

The allegation has been fully addressed, and no further action is required.

NRC Allegation #470

It is alleged that:

3) Actually the problem was worse. In effect there was no formal QA program for pipe supports and pipe rupture restraints. The problem first was identified in a November 1973 audit (Exhibit 5) which conceded that the QA Manual skipped pipe supports and pipe restraints. Instead there was only ESD-223, the installation procedure which the auditor called "in essence, an 'alternate QA program' approved by the Resident Mechanical Engineer, instead of the Director of QA as required. (Id.) (3/22/84 Hudson Aff. at 4.)

281. The deficiencies in Pullman's QA program which are noted in this allegation were reported in the PGandE audit in 1973. Subsequently, Pullman revised its QA program to include pipe supports and rupture restraints, and the revised program was submitted to PGandE's Corporate QA Manager for approval. The program was approved on December 11, 1973. The reinspection was completed and closed out by PGandE on January 15, 1974.

282. All pipe supports and rupture restraints that were installed under the original ESD 223 were reinspected and were replaced or repaired, if necessary, or accepted. Each was properly documented in accordance with the new program.

283. This allegation raises nothing new, and since the condition was corrected, no further corrective action is necessary.

NRC Allegation #471

It is alleged that:

4) Although Pullman [sic] identified many deficiencies of ESD 223 in 1973, the company did not learn its lesson. The NSC audit repeated similar findings in 1977. (Hudson Aff. at 5.)

284. The 1973 PGandE QA audit of the M. W. Kellogg Quality Assurance Program, which is actually referred to in this allegation, identified that pipe support and rupture restraint work was not covered under the main program. This work was being conducted under what was considered by the auditor as an "alternate QA program" under the provisions of ESD 223. The auditor evaluated ESD 223 as a QA program and identified eight programmatic deficiencies. In resolving this audit, Kellogg developed the Pipe Support Quality Assurance Manual for pipe support and rupture restraint work. This manual was approved by PGandE on December 11, 1973. A review of the NSC audit reveals that there were no programmatic findings in these eight areas except for two items in the area of document control. The area of document control identified was that there was no procedure for control of ESDs or Special Quality Assurance Procedures. Contrary to the allegation, as a result of the various audits over time, M. W. Kellogg did "learn its lesson" and improved its QA program on pipe supports and rupture restraints.

285. No further action is required.

NRC Allegation #47:

It is alleged that:

5) A January 10, 1977 memo from Pullman QA manager J. Runyan explained another major point: The pre-December 1973 pipe supports were installed "prior to implementing the inspection program" (Exhibit 6) (Hudson Aff. at 5.)

286. The January 10, 1977, memorandum referred to in the allegation simply acknowledges the previously mentioned fact about deficiencies in the Pullman QA program four years before in 1973. The memorandum, however, also lists the steps that were "taken" to ensure that the requirements of the new ESD 223 were met. The memorandum concludes, "It is my opinion that this program will insure [sic] the present installations are, as a whole, meeting the requirements of ESD 223." Rather than show the continuous deficiencies, the memorandum demonstrates compliance.

287. No further corrective action is required.

NRC Allegation #473 and #474

It is alleged that:

6) A November 13, 1978 memorandum from Pullman's Senior QA Engineer R. J. Manning (Exhibit 7) conceded that "in the past" Pullman "did not conduct audits or practices to ASME or 10 CFR 50, but I feel it very essential to do so now." As demonstrated by my own personal experience, the author's advice was ignored. From my reviews, I know that the early audits which existed were well-intentioned, but crude, uncontrolled and informal. They were too sloppy to constitute a minimal program. For example, a 1973 audit referenced conclusions about pipe rupture restraints to the contract for pipe supports, which didn't apply to the work in question. (Exhibits, Supra.) (3/22/84 Hudson Aff. at 5.)

7) Until at least November 1978, some parts of the QA program had never been audited. As revealed by Mr. Manning, "The Diablo Canyon program has been audited extensively only in hardware areas. The entire program has not been evaluated." (Exhibit 7) (Hudson Aff. at 5.)

288. Contrary to Allegation #473, Pullman did audit the Diablo Canyon Project to the requirements of 10 CFR 50 or ASME. In order to qualify for NA and NPT stamps from ASME, Pullman was required to commit to and did audit its projects according to the requirements of ASME. Consistent with such requirements, Pullman established its QA Manual and QA procedures which required audits to procedures which satisfied ASME. Management audits of the Diablo Canyon Project were conducted by Pullman on a regular basis beginning in 1972 (Attachment 16) in addition to internal audits. Those audits were conducted to ensure compliance with Specifications 8711 and 8833XR. While neither specification specifically references 10 CFR 50, each specifies the criteria to be met by Pullman's QA program. These criteria, in their substance, address the 18 elements of 10 CFR 50, Appendix B. The 1973 PGandE audit specifically found, "M. W. Kellog's [Pullman's] QA Manual complies with Section 4 [Quality Requirements] of the Specification." The quality requirements for Specifications 8711 and 8833XR are identical.

289. J. R. Manning's memorandum followed the NSC audit of Pullman in 1977 and can be seen as an exhortation that the prospective corporate audit of the project be in the form of 10 CFR 50 or ASME to guarantee that the Pullman QA program satisfies third party review by NRC or ASME. The NRC Staff in its review of the Pullman corporate audit

program determined that, while the elements of the QA program were general, there was "a history of Quality Assurance Program Audits based on checklists following 10 CFR 50 Appendix B criteria" (NRC Inspection Report No. 50-275/83-37 at 7-8).

290. Contrary to the allegation, it was a PGandE audit, not a Pullman audit, which addressed both piping and rupture restraints. As discussed above, the QA requirements for Specifications 8833 and 8711 are the same.

291. Contrary to the implication of Allegation #474, the Pullman Diablo Canyon QA program was audited both in hardware and software areas prior to 1978. Subsequent to a 1978 PGandE audit of a Pullman audit (PGandE Audit No. 80422), extensive additional effort was expended just in the hardware area of the Pullman program because of PGandE findings. This additional audit effort is what is referred to by Mr. Manning in his memorandum. PGandE found no reason to require an additional audit effort in the program portion of the Pullman QA program.

292. Pullman's QA program has been audited since the contract began to the substantitive requirements of 10 CFR 50 and ASME. Deficiencies found by the audits by Pullman or PGandE have been corrected, and no further corrective action is required.

NRC Allegation #1362

Allegation Description:

Boston-Bergen QA requirements based on wrong contract spec.

This allegation also comes from the letter of Harold Hudson to Congressman Morris Udall dated June 9, 1984 (Attachment A, page 6). The allegation is based upon three letters from PGandE to Boston-Bergen dated October 24, 1974, December 23, 1974, and January 7, 1975 (Attachments B, C, and D), and a PGandE internal memorandum dated September 24, 1974 (Attachment E). Based upon the internal memorandum, which refers to specification 8833XR as the source of quality assurance requirements for the work done by Boston-Bergen, the alleger claims that the Boston-Bergen QA requirements were based on 8833XR. To the contrary, the correspondence to Boston-Bergen (Attachments B, C, and D), makes it clear that the correct specification to be used was 8831R and Boston-Bergen was repeatedly told so. This allegation is without merit.

16

DOCKETED
USNRC

'84 JUN 21 A10:49

To: Rep. Morris Udall, Chairman
House Interior and Insular Affairs Committee
Washington, D.C. 20515

Attn: Dr. Henry Myers

From: Harold Hudson

Date: 6-9-84

Subject: Deficiencies in the Nuclear Regulatory Commission Inspection to determine the extent to which Pullman and PG&E had implemented an adequate audit program during startup phase of Pullman work at Diablo Canyon (Report Nos. 50-275/84-16 and 50-323/84-06).

The special, unannounced NRC inspection on April 2-4, 1984, to examine audit records of Pullman Power welding activities, performed during the period of August 1971 through December 1973, does not provide an accurate assessment of the PG&E and Pullman audit programs. There are a number of deficiencies in the report based mainly on the apparent omission of information. The NRC report concluded: "Based upon a review of PG&E and Pullman audits it appears 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. Based upon the above reviews the inspector condludes that:

a. the Pullman audit program met the intent of Safety Guide 28 (June 1972) and ANSI N45.2-1971, in effect during that time period, and, therefore, the intent of Appendix B,

b. the audits appeared to be of reasonable competence and quality, and

c. based upon a sampling of corrective actions it appears that findings were followed up and resolved ina responsible fashion."

There is documented evidence which I believe will show that the NRC conclusions are not an accurate assessment of the Pullman and PG&E Audit Programs during the 1971 to 1973 period.

1. The NRC Report states: "The inspector read through and surveyed the above audits to develop a sense of the audit competency and quality. The audits were performed by Pullman and PG&E to determine compliance with the Pullman Quality Assurance Program (KFP's). The inspector noted that applicable procedures of the QA program related to welding activities were audited: KFP-8 "Process Planning and Control", KFP-I2 "Control of Filler Metal", KFP-13 "Postweld Heat Treatment", and KFP-15 "Welding Qualification". Further,

the above audits deomonstrated that Field Process Sheets (travelers) were audited for compliance to KFP-8 (for each field weld the process sheet lists operations such as fit up, weld completion, NDE, and designated holdpoints for QC and the Authorized Nuclear Inspector's inspection and approval)."

What the NRC Inspector apparently failed to recognize was that the Pullman QA program related to welding activities, which were audited by Pullman and PG&E, and surveyed by the NRC Inspector for a sense of audit competency and quality, was not applicable to Pipe Hangers (Supports) and Pipe Rupture Restraints.

a. The NRC Inspector references a PG&E Audit #73-15 (11-29 and 12-19, 1973) but failed to recognize the significance of its findings in relation to the scope of his work. PG&E Audit #73-15 disclosed that in regard to Pipe Hangers (Supports) and Pipe Rupture Restraints, M.W. Kellogg and PG&E's General Construction Dept. departed significantly from the requirements of the Specification and PG&E's QA Manual. "MWK's Quality Assurance Program does not comply with Section 4 of Specification 8711 and (PG&E) Procedure PRP-4. The (PG&E) Mechanical Dept's surveillance program does not comply with Procedure PRC-7". PG&E Audit #73-15 reviewed MWK's Q.A. Manual, with respect to Pipe hangers and restraints, for adequacy and compliance to Spec 8711 and PG&E QA Procedure PRP-4. Audit #73-15 concluded that MWK's approved QA Manual "does not specifically address itself to, nor is it completely applicable to, the control of pipe hangers and restraints." Thus MWK wrote an "Engineering Specification," ESD 223. The intent of ESD 223 was to set forth procedures and instructions to the field QA inspectors, engineers and foremen implementing the policy stated in the QA Manual. Audit #73-15 concluded ESD 223 established QA policy instead of providing instructions on how to implement the policy stated in the Manual. Audit #73-15 also concluded that "The program set forth in ESD 223 does not meet all of the requirements of Section 4 of the Spec. Deficiencies were noted in the areas of document review and control, qualification of special processes and personnel, work procurement control, receipt inspection of material, identification control and status of material, nonconforming material control, inspection and test records and inspection and test plans. Consequently the hanger and restrain QA program is in violation of Procedure PRP-4.

Audit #73-15 would review the receipt, storage and installation of pipe hangers and rupture restraints - and identify numerous major discrepancies (see attached PG&E Audit #73-15).

Audit #73-15 audited PG&E's Resident Mechanical Engineer's surveillance system of the fabricating, furnishing and installing of pipe hangers and rupture restraints, which was performed by the Power Plant Piping Group. PG&E Procedure MFI-2 set forth the Resident's written instructions to personnel in this Group. The audit concluded that "MFI-2 Instructions do not specifically address themselves to the surveillance of pipe hangers and restraints and are not applicable to the inspection of pipe hangers and restraints. The inspection is performing other inspections, however, these inspections are not documented or described in the MFI.

HOH

The bottom line is that sudits 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 NRC Report conclusion that "it appears that audits of Pullman welding activities were thorough and conducted in accordance with the Pullman QA Program" is not an accurate assessment in regard to Pullman's Pipe Hanger and Pipe Rupture Restraint Programs. The NRC Report conclusion that "audits appear to be of reasonable competence and quality" is not accurate in regard to Pipe Hangers and Pipe Rupture Restraints.

b. A major fallacy in the PG&E audit program in the 1971 to 1973 period was that Pipe Rupture Restraints were audited against PG&E Contract Spec. 8711. PG&E's C.S #8833XR specified the fabrication, erection and Quality Assurance requirements for Pipe Rupture Restraints. Yet PG&E's Audit #73-15 of Rupture Restraints would be against the requirements of C.S. #8711 not C.S. #8833XR. All PG&E audits performed prior to Audit #73-15 were also against C.S. #8711. This leaves the PG&E audit program for Pipe Rupture Restraints indeterminate during this time period. Again the NRC Inspector has not recognized this deficiency in the audit program.

1344

HOH

*See Port Script.

c. The NRC Report does not reference a 10-24-73 Pullman Internal Audit, which was the first documented Internal Audit performed specifically on Pipe Rupture Restraints. Per C.S. #8833XR Pullman was scheduled to begin erection of Pipe Rupture Restraints in Unit I on 7-8-72. Yet it would be 16 months before an Internal Audit would be performed on the program. This audit would note discrepancies with weld rod requisition and that some restraints did not have any rod requisitions. Again this audit would reveal

that C.S. #8711 was being used in conjunction with C.S. #8833XR for the installation of restraints.

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 omission of this audit from the NRC Report and the finding revealed by the Audit cast doubts on the NRC conclusion "that audits of Pullmans welding activities were thorough and conducted in accordance with the Pullman QA Program."

d. The first documented Pullman Internal Audit of Pipe Hangers (Supports) was performed on 9-18-73 and is referenced in the NRC Report. The audit report states that the scope of the Audit was "adherence to the Engineering Specifications and Quality Assurance Manual." It would be identified in PG&E Audit #73-15 that Pullman QA Manual (KFP's) did not specifically address or was applicable to Pipe Hangers. The PG&E Audit would also identify that ESD 223 established QA policy instead of providing instructions for the installation of hangers, in essence, on "alternate QA program, which was not submitted to the PG&E Quality Assurance Dept. for review and approval prior to use. (1346)

The NRC Report does not address these discrepancies but concludes that "the audits appeared to be of reasonable competence and quality."

e. The NRC Report states "the above audits demonstrated that Field Process Sheets (travelers) were audited for compliance to KFP 8". The NRC Report is misleading in regard to Pipe Hangers (Supports) and Pipe Rupture Restraints. It has already been established that the Pullman QA Manual (KFP's) was not applicable to Pipe Hangers and Pipe Rupture Restraints.

PG&E Audit #73-15, dated 11-29 and 12-19, 1973, identified:

1. Hangers for pipe 2-1/2" and greater:

   a. Subcontractor supplied hanger assemblies were not inspected by QA personnel. (1347)

   b. Hanger assemblies fabricated on site do not receive any in process or final inspection. (1348)

   c. The installation of hangers received a final inspection, but no inprocess inspections. (1349)

d. Inspectors are using inspection forms which they consider necessary but are not controlled by the QA Program. (1350)

e. The conditions of field welds were generally rough and irregular. Some welds specified on the drawings were not made. No discrepancy reports or other documentation authorizing the acceptance of these discrepancies were available. (1351)

f. Inspectors could not furnish any explicit acceptance criteria. (1352)

2. Field run hangers for pipe less than 2-12":

a. All field run pipe hangers are fabricated on site. These hangers do not receive any inprocess or final inspections.

b. The installation of hangers receive a final inspection but no inprocess inspections.

c. The auditor noted rough and irregular welds, undersize and incomplete welds, hangers not in the location specified by the drawings, hangers not fabricated in accordance with approved drawings.

3. Pipe Rupture Restraints: (1353)

a. The method of recording inspections and acceptance criteria are not set forth in an instruction. All inprocess inspections of workmanship and technique required by the AWS Code are not being performed. (1354)

b. Some welders were welding materials of greater thickness than they were qualified for. (1355)

c. Welding was not in complete accordance with the assigned weld procedures.

The Pullman and PG&E Audits of KFP 8 were obviously not applied to Pipe Supports and Pipe Rupture Restraints. Yet the NRC Inspector does not reveal this even after he had reviewed the PG&E Audit #73-15. For the time period being discussed, Pullman would not identify any of the Hanger and Restraint discrepancies listed above. PG&E's onsite General Construction QC group would not identify any of the discrepancies. Not until October/November 1973 (the very end of the time frame

being discussed), when the PG&E Corporate QA Department performed Audit #73-15, would the discrepancies be identified. The NRC Report conclusion 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" is not an accurate assessment regarding Pipe Hangers and Rupture Restraints.

2. The NRC Report concludes: "The Pullman audit program met the intent of Safety Guide 28 (June 1972) and ANSI N45.2-1971, in effect during that time period, and therefore, the intent of Appendix B." There is documented evidence which apparently was not reviewed by the NRC Inspector, which suggest the NRC conclusion about the Pullman Audit Program may not be completely accurate for the August 1971 to December 1973 time period for Piping, Pipe Supports and Pipe Rupture Restraints.

   a. A Pullman Corporate Interoffice Correspondence, dated 11-13-78, from the Senior QA Engineer, concerning Corporate Management Audits, states that "The Diablo Canyon project has been audited extensively only in hardware areas. The entire program has not been evaluated." The same IOC states "In the past, Pullman Power Products did not conduct audits or practices to ASME (Pullman's QA Manual is based on ASME Code Section III, 1971 edition) or 10 CFR 50, but I feel it s very essential to do so now".

   b. A PG&E Corporate Management Audit #80422, dated 6-13-78, indicates that the ANSI standards are not applicable to Pullmans QA Program. Audit #80422 states "ANSI N45.2 states in its forward that it is not applicable to work performed in accordance with the Code (ASME Section III).

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

   d. PG&E Audit #80422 identified that the Pullman Quality Assurance Program is not adequately defined. The ASME Code Section III, 1971, requires that the Quality Assurance Program be documented in detail in a manual consisting of written policies, procedures, and instructions. Pullman Corporate Procedure No. XVIII-I, is presently being used for the performance of management audits of field activities. This procedure implemented QA requirements of the contract but were not identified as part of the program and revisions were not controlled by the program.

   e. PG&E Audit #80422 indicated that PG&E C.S.#8711 and the 1971 ASME Code required a comprehensive system

of planned and periodic audits to be carried out to assure compliance with all aspects of the QA Program. Audit #80422 identified:

> "Procedure KFP-18 states in its scope that it establishes such a system. However, two types of audits, management audits and internal audits, are described. The procedure does not establish the scope of either type of audit and no detailed schedule has been developed to show that all aspects of the program are being audited. Furthermore, audit records at the site do not indicate that all aspects of the program are being audited. Records do not indicate that management audits have been performed on pipe support work (and pipe rupture restraints)." An unofficial, unapproved internal audit schedule exists, but it has not been followed consistently and for ESD's appear on th schedule".

In light of the above listed evidence, which would have been in effect during the 1971 to 1973 time frame, the NRC Report conclusion about the Pullman audit program during the 1971 to 1973 period becomes suspect.

The NRC Report reveals that a number of Pullman Internal and Corporate audits were performed as well as PG&E audits, on QA Manual (KFP) procedures related to welding activities. But the QA Manual was applicable to Piping only, not to Pipe Hangers (Supports) or Pipe Rupture Restraints. Therefore the conclusion reached by the NRC Inspection are not applicable to Pipe Hangers and Rupture Restraints. In addition, there is evidence documenting serious deficiencies in the Pullman Corporate and Internal audit program which would suggest noncompliance to 10 CFR 50 Appendix B during the 1971 to 1973 time period.

This letter has presented evidence which indicates that Pullman and PG&E did not implement an adequate audit program for all three major areas of construction, Piping, Pipe Hangers (Supports) and Pipe Rupture Restraints, during the startup phase of Pullman work at Diablo Canyon. Many areas have since been corrected as a result of the Audit Program but only after a repeated history of discrepancies. Areas of inadequate corrective action include:

1. The QA Program Description for Pipe Hangers (Supports) and Pipe Rupture Restraints. See PG&E Audit #73-15 and #80422 and Pullman Internal Audit of 10-24-73. 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. Per the QA Program Description certain sections of the Piping QA Manual apply to Pipe Supports and Rupture Restraints but it does not specify which section for which type of work. The Piping QA Manual is based on ASME Section III, 1971 edition.

2. Preheating of welds. The Pipe Rupture Restraint Crack Repair Program was the result of inadequate corrective action to poor preheating practices.

3. The Pullman Audit Program. See PG&E letter dated 9-19-73, Quality Assurance Audits (Failure to follow existing and and upgrade Quality Assurance procedures). See PG&E Audit #75-2 and PG&E letter dated 3-25-75 concerning the need for a more comprehensive and extensive internal audit system. See PG&E Audit #80422. 1360

4. QA Documentation for Pipe Support and Pipe Rupture Restraint work. See PG&E Audit #73-15, PG&E NCR # DC1-79-RM-003, PG&E NCR # DC1-78-RM-009 1361

There are other areas of inadequate corrective action which would require more research and time to write about.

I hope this information will be of use during your hearings with the NRC.

Sincerely,

Harold O. Hudson

Harold O. Hudson
Former Pullman, QA/QC Inspector,
QA Program Internal Auditor,
Lead Auditor and Pipefitter

Part Script:
The problem of PG+E auditing Pipe Rupture Restraints to C.S.#8711 extended to 1975. See PG+E Audit # 75-2 and PG+E letter dated 3-25-75. Pipe Rupture Restraints should have been audited to C.S. #8933R, 1362
The problem of which contract Spec to work to was not limited to Pullman. PG+E would direct Burton-Berger Metal Products to establish QA requirements to the wrong contract Specification. See PG+E Memorandum, 9-24-74, and PG+E letter dated 10-24-74, PG+E letter dated 12-23-74, and PG+E letter dated 1-7-75. HOH

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List of Attachments

1. U. S. Nuclear Regulatory Commission, Region V, Report Nos. 50-275/84-16 and 50-323/84-06.
2. PG&E Audit #73-15, Oct. and Nov. 1973.
3. M.W. Kellogg Interoffice Correspondence, 9-18-73, Subject: M.W. Kellogg Internal Audit of Hanger Dept.
4. M.W. Kellogg Interoffice Correspondence, 10-24-73, Subject: Follow up Audit of Hanger Dept. and Audit of Rupture Restraints QA Program.
5. Interoffice Correspondence, 11-13-78. Subject: Upcoming Audit of Diablo Canyon in December.
6. PG&E Audit #80422, 6-13-78. Pullman Power Products QA Program
7. PG&E Letter, 9-19-73, Quality Assurance Audits.
8. PG&E Letter, 3-25-75, Quality Assurance Audits.
9. PG&E Audit #75-2, 2-20,21 and 25, 1975.
10. PG&E NCR # DC1-79-RM-003, 1-24-79
11. PG&E NCR # DC1-78-RM-009, 10-26-78
12. PG&E Memorandum, 9.24.74, To Bostrom-Bergen Metal Products.
13. PG&E letter, 10-24-74, to Bostrom-Bergen Metal Products.
14. PG&E letter, 12-23-74, to Bostrom-Bergen Metal Products
15. PG&E letter, 1-7-75, to Bostrom-Bergen Metal Products.

PACIFIC GAS AND ELECTRIC COMPANY

COPY

IGOR SOKOLOFF

October 24, 1974

Mr. E. J. Nicholini
Vice President
Bostrom-Bergen Metal Products
4700 Coliseum Way
Oakland, Ca. 94601

Diablo Canyon Project
GM 167027 - Spec. 8831R
Pipe Restraint Q.A. Material FC01223

Dear Mr. Nicholini:

The Quality Assurance requirements for the NSC designed structures which you are furnishing shall be as follows:

1. The general applicable requirements are those outlined in Specification 8831R and detailed in your Quality Assurance Manual prepared for that specification.
2. Charpy impact tests for carbon steel are required for information only. Tests shall be made at +20° F.
3. Charpy impact tests are not required for type 304 stainless steel. (Schmitt Steel should be so advised.)

Sincerely,

M. E. Chandler

JWoodward:ls

bcc: PSBain
EPWollak/VJChio/ISokoloff (2)
AFDonatti (CFA)
CGWarfield
CASeban

434

COPY

IGOR SOKOLOFF

December 23, 1974

Mr. E. J. Michelini
Vice President
Bostrom-Bergen Metal Products
4700 Coliseum Way
Oakland, CA 94601

Diablo Canyon Project
GM 167027 - Spec. 8831R
Pipe Restraint Q.A. Material PCO 1223

Dear Mr. Michelini:

This letter confirms verbal instructions given you by Mr. Art Walenta and Mr. T. Ewoldt on December 20, 1974.

All stainless steel rods must be in accordance with the applicable ASTM specification designation as shown on the design drawings. Any rod not falling within the limits of ASTM specification designation must be approved before proceeding. The rod in question is shown on your reference letter 56, page 4 of 4.

According to Mr. Walenta you were not fully aware that you were to follow the general applicable Quality Assurance requirements as outlined in Specification 8831R rather than 8833R. This was the intent as mentioned previously in our October 24, 1974, letter.

Sincerely,

H. H. CHANDLER

TWEwoldt:sc

bcc: RSBain
AFDamattei (CFA)
CKMansfield
CISedam
EPWollak/VJChio/ISokoloff (2)✓

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PACIFIC GAS AND ELECTRIC COMPANY

COPY

Mike Arsten

NRC SOKOLOFF

January 7, 1975

Mr. E. J. Nichelini
Vice President
Bostrom-Bergen Metal Products
4700 Coliseum Way
Oakland, CA 94601

Diablo Canyon Project
CM 167027 - Spec. 8831F
Pipe Restraint Q.A. Material FCD1223

Dear Mr. Nichelini:

This letter will answer questions posed in your reference letter 60, dated December 27, 1974.

(1) Job direction sequence will be as follows:

Phase I	Pipe Wall
Phase II	Area CB/CA
Phase III	Pipeway
Phase IV	Turbine Building

You have already received marked up drawings for Phase I showing our proposed erection sequence. We will furnish erection sequences for each of the remaining phases, if our field personnel think it necessary.

(2) Final release dates for Nuclear Service Corporation design drawings remain the same as stated in their October 28, 1974 letter except for Phase I which we received December 26 and December 31, 1974, and the Component Cooling Water Heat Exchanger Jet Impingement Barrier which will be delayed. You will still need to add a minimum of two weeks to these dates for Pacific Gas and Electric Company coordination before you would receive them.

(3) Anticipated time required to approve your shop drawings will be approximately three weeks.

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...FIC GAS AND ELECTRIC COMPANY

COPY

IGOR SOKOLOFF

- 2 -

January 7, 1975

Mr. E. J. Michelini

On January 2, 1975, you again asked for a clarification as to which specification you were to follow for Quality Assurance, workmanship and material. As you stat -, and we stand corrected, General Quality Assurance should be in accordance with Specification 8831R. Material and workmanship should be in accordance with Specification 8833XR. NSC design drawings already reflect this requirement.

Sincerely,

M. H. Chandler

TEwoldt:lw

bcc: PSBain
AITamattei (GPA)
WRForbes/AValenta
CMayfield
[illegible]
EPWollak/TJGaio/ISokoloff (2) ✓

File

Rec'd 10-24-76

(1) I.S.
~~(2) EML~~
(3) ~~SH~~
(4) I.S.

MEMORANDUM

Date 9-24-74

To P.S. Bran... Location ... Ext. ...

From V.O. ... Location ... Ext. ...

SUBJECT Diablo Canyon - Pipe break outside cont. - NSC design - quality assurance requirements File No. ...

This is to confirm that appropriate quality assurance requirements shall apply to the fabrication and installation of structures designated for use by NSC to mitigate the effects of high energy pipe ruptures outside the containment.

For structural steel (excluding impingement sleeves) applicable quality assurance requirements are those contained in ... 8833-XP ... with the exception that Charpy impact tests are required for information only on carbon steel only. No Charpy tests are required on type 304 stainless steel (stainless sleeves ...).

For impingement sleeves refer to D.V. ... letter to R.P. ... dated 6/25/74 for applicable quality assurance requirements.

Date ...

CC: W.T.L.
EPW
H.J.G.
D.N.
A.G.W.

IGOR SOKOLOFF

NRC Allegation #1363

Allegation Description:

In response to allegation PGandE made false statement regarding allegers failure to document his concerns prior to making allegation.

This rebuttal allegation appears to come from a letter from GAP to Congressman Leon Panetta dated June 13, 1984, but received June 21, 1984 which states:

> PG&E's response is misleading. It fails to add that management had verbally instructed him not to write up such problems on formal reports. He was following orders by disclosing QA problems on informal notes. This policy is dangerous because reporting the systems insures that the QA problems receive full engineering review by PG&E and are monitored by the NRC for their safety significance (Attachment A, page 2, para. 2).

The rebuttal is merely the unsupported hearsay assertion of Mr. Devine who is a Washington D.C. attorney and not a worker on site. Contrary to the allegation, the Field QA/AC Manager has been questioned on this matter and indicates that no verbal instructions were given that QA deficiencies should be written up on informal notes and not formal QA documents.

The subject matter of this allegation was discussed in response to GAP #199 in PGandE letter DCL-84-166 dated April 30, 1984, and PGandE letter DCL-84-187 dated May 17, 1984. The previous allegations and responses are attached hereto (Attachment B). As stated in the second response, which was submitted after the affidavit was received, the condition of concern to the alleger was inspected by Pullman Engineering at the time the concern was raised and reviewed as to safety effect. The specific baseplate in question was filled with grout, contrary to the allegation. In addition, the related engineering

calculations were analyzed on the basis of the absence of grout and the bearing surface of the plate still met criteria.

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COLLECTED

GOVERNMENT ACCOUNTABILITY PROJECT
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(202) 234-9382

June 13, 1984

The Honorable Leon Panetta
U.S. House of Representatives
339 Cannon House Office Building
Washington, D.C. 20515

Dear Congressman Panetta:

My name is Thomas Devine. I am the legal director of the Government Accountability Project. I am writing on behalf of a Diablo Canyon whistleblower whom I represent. He is fed up after repeated efforts to work within the system at Diablo Canyon, as offered by Pacific Gas and Electric (PG&E), its contractor Pullman Power and the Nuclear Regulatory Commission (NRC) representatives of Region V. He is concerned that the plant is being licensed on the basis of false statements, while potentially dangerous conditions remain uncorrected.

He has taken his evidence to the NRC, which has frustrated him by not responding at all, or by accepting PG&E/Pullman responses uncritically. He is angry that the NRC compromised his anonymity, which he believes has led to increased harassment.

He seeks the assistance of your office in persuading the government to respond honestly to legitimate concerns that could affect public health and safety. In order to avoid becoming any more of a public figure than the NRC has made him already, he asked me to submit to you the information summarized below.

I. MISLEADING OR MATERIAL FALSE STATEMENTS

Like many whistleblowers at Diablo Canyon, this employee submitted a sworn statement detailing his charges to the NRC, after the system at the plant did not respond. He believes that PG&E's answers to the allegations contain misleading or material false statements. That is no basis on which to officially bless Diablo Canyon for commercial operations. Illustrative examples are listed below:

1. One of the employee's charges was that Pullman's quality assurance (QA) manager did not respond to a 1982 inquiry over a potentially widespread problem with baseplates that are mounted over concrete voids. The employee was concerned that the voids could affect the baseplates' ability to bear heavy structural loads for which they are responsible. (See March 1 2.206 petition, GAP allegation #199, p. 12).

PG&E answered in part that the employee was at fault for raising the issue through an informal memorandum. In an April 30 letter to the NRC, the utility stated somewhat stuffily, "Had he documented it on a DR [Discrepancy Report] or DCN [Deficient Condition Notice] in accordance with established procedures, the problem, if indeed there were one, would have been properly addressed." (A[illegible] 30 letter to the NRC, DCL-84-166, at p. 12).

PG&E's response is misleading. It fails to add that management had verbally instructed him not to write up such problems on formal reports. He was following orders by disclosing QA problems on informal notes. This policy is dangerous, because the reporting system insures that QA problems receive full engineering review by PG&E and are monitored by the NRC for their safety significance.

Unfortunately, the coverups are getting cruder. Other witnesses have described 1984 written instructions for inspectors not to write Discrepancy Reports.

This is one of the problems the NRC says is too insignificant or repetitive to interfere with operating the plant. Perhaps that explains why management is so arrogant that it is attempting to close down the reporting system just when it is most needed -- on the eve of operation. Perhaps that also explains why we still don't know the condition of Diablo Canyon on the eve of operation. Possible QC violations such as with the baseplates were reported on notes which management now claims it "has not been able to find, or even recall . . ." (PG&E April 30 letter, DCL-84-166, at p. 11). Luckily, the witness kept his copy of the "lost" note in this case.

2. The same witness was also concerned about the use of a copper backing bar for certain welding without first conducting qualification tests on the effects. Cracking occurred in welding done with the copper backing bar. (March 1 petition, GAP allegations #176-179, at pp. 6-7).

In partial response, PG&E claimed "there is no documented evidence that the inspector contacted his leadman or the QA/QC Manager regarding his concerns about the use of copper backing." (PG&E April 30 letter, DCL-84-166, at pp. 20-21).

That is a false statement, unless the documented evidence was destroyed. Even then it would be misleading. The whistleblower and another inspector co-authored written findings about the problem on a process sheet. The QA Manager certainly was not ignorant. He admonished the co-author for writing up the problem report that PG&E now says doesn't exist.

This is another one of those issues the NRC hasn't yet resolved. The agency has not contacted the witness to check the accuracy of PG&E's excuses.

3. The witness also had dislcosed how unmarked tools were used on-site for welding on stainless steel pipes. This could lead to metal contamination and cracks in the stainless steel. At the time, the employee wrote up a Deficient Condition Notice (DCN) on the problem and tried to stop work with a hold tag until the controversy was resolved. Management ordered him to remove the hold tag and then waited a year before "resolving" the DCN by rejecting it. (March 1 2.206 petition, GAP allegations #195-96, pp. 11-12).

The NRC's response illustrates why this whistleblower has lost faith in the agency. A few weeks ago the agency informed the employee that witnesses on-site had not backed his recollection of events. Further, the NRC explained that the date of the DCN was two days after stainless steel work had stopped, so apparently he had been mistaken.

On the surface the answer sounded reasonable. But the whistleblower realized that something was seriously amiss. He had been an eyewitness to the stainless work and submitted the DCN two days later. The NRC hadn't bothered to check that detail. Second, the NRC talked with the witnesses accused of wrongdoing. They didn't check with the whistleblowers for witnesses who would back him. The employee concluded that the NRC was either being duped, or trying to dupe him. The staff promised to consider further inquiry but has not yet agreed to talk with proposed witnesses.

II. COMPROMISING CONFIDENTIAL SOURCES

The whistleblower feels personally betrayed by a new NRC policy to turn over all employee affidavits and exhibits to the utility for response. Even with his name deleted, the utility was able to identify him as the source of numerous allegations after the NRC turned over his evidence. The utility then published his name in legal briefs.

This policy puts employees in a Catch-22 dilemma: either disclose allegations in an abstract manner which the NRC will then dismiss as too vague; or disclose problems with specificity, which will make confidentiality impossible once the statements and exhibits are turned over. Either way the public is hurt -- through exposing whistleblowers to reprisal, or by drying up the free flow of information on safety issues.

That is why this employee is turning to Congress for help. There are enough coverups at Diable Canyon due to management, without the NRC making it worse. This witness and others are willing to meet with you or any other interested Congresspeople, in an effort to restore Diablo Canyon to legal accountability before it begins commercial operation.

Sincerely,

Thomas Devine

Thomas Devine

GAP #199, Petition at 12.

> In the summer of 1982, the same inspector raised but never received a response to a memorandum asking Mr. Karner about a potentially widespread problem with baseplates that are mounted over concrete voids. The inspector believed that the voids could affect the strength of the bearing surface for the baseplates. (citing 2/25/84 Anon. Aff. at 12 and related Exhibit 22.)

23. The Project is unaware of problems with baseplates mounted over concrete voids, and Pullman has not been able to find, or even recall, any memorandum about this allegation.

24. The concrete placement program requires an inspector to be present during all concrete pours. When the forms are stripped, the concrete is inspected for voids. If voids are found, they are documented and repaired in accordance with approved contractor procedures.

25. Pullman is also responsible for inspecting holes for concrete anchors prior to attachment of the base plate. Any voids are required to be documented in accordance with approved procedures. Based upon review of the documentation, no problems with base plates mounted over concrete voids have been discovered.

26. The anonymous alleger claims to have documented this problem on an informal memorandum to Mr. Harold Karner. Had he documented it on a DR or DCN in accordance with established procedures, the problem, if indeed there was one, would have been properly addressed.

GAP #199, Petition at 12.

It is alleged that:

In the summer of 1982, the same inspector raised but never received a response to a memorandum asking Mr. Karner about a potentially widespread problem with baseplates that are mounted over concrete voids. The inspector believed that the voids could affect the strength of the bearing surface for the baseplates. (citing 2/25/84 Anon. Aff. at 12 and related Exhibit 22.)

The difference between the Petition and Attachment 2 is that the allegation refers to a memorandum to Mr. Karner concerning "a potentially widespread problem with baseplates that are mounted over concrete voids," whereas Attachment 2, pp. 19-20 and Exhibit 37, identify the actual concern as a question about the installation of base plates over unistrut embedded in concrete and the reduction in bearing surface where the grout did not completely fill the unistrut. Since the original response did not discuss this concern, the original response should be deleted and the following supplemental response inserted in its place.

A review of the Pullman files has failed to discover a copy of the memo attached as Exhibit 37. In fact, neither Mr. Karner nor Mr. Werner, to whom Exhibit 37 was addressed, can recall ever seeing the memo. However, Mr. Werner does recall discussing the matter with Mr. McDermott and going into Unit 2 and inspecting the baseplate in question. Mr. Werner recalls explaining to Mr. McDermott that he did not consider the condition to be of any consequence due to the relative sizes of the baseplate and the unistrut.

From an engineering standpoint, the existence of embedded unistruts under rupture restraint baseplates generally would not be a cause for concern. In most cases, the unistruts are completely filled with grout when the baseplates are grouted, thereby eliminating any concern regarding grout voids. Even if the unistrut is not entirely filled, the small size of the unistrut, 1-5/8" wide, limits the size of the potential void. Baseplates require bearing when they are subject to direct or flexural compression. Due to the typical size of the baseplates they can easily span across a hypothetical void caused by the 1-5/8" wide unistrut with negligible effects on their stiffness. The small reduction in bearing area, typically 2 percent, caused by the existence of an unfilled embedded unistrut would be negligible.

To further illustrate this insignificance of voids in embedded unistruts, pipe support baseplate grouting, as addressed in ESD 223 section 6.3.7.2, allows gaps under the baseplate to extend over 25 percent of the baseplate surface area. While the rupture restraint construction procedures do not address the maximum acceptable voids, applying this same 25 percent criteria to rupture restraint baseplates, would demonstrate that the bearing surface of the plate more than adequately meets design requirements.

For the specific case identified in this allegation, the Unit 2 rupture restraint design has been reviewed and calculation no. 52.23.145.1 has been amended to acknowledge the existence of the embedded unistrut. As part of the review, the unistrut was assumed to be totally devoid of grout, thereby reducing the bearing surface by 2 percent. Since the baseplate design has a

factor of safety of 15, a 2% reduction in the bearing surface is of no significance thereby substantiating the original judgement made by Mr. Werner and contradicts any notion that management sought to cover-up a potential problem.

At the same time engineering was reviewing the design, Mr. Werner visually reinspected the baseplate in question and determined that the embedded unistrut is filled with grout.

Therefore, this allegation raises no technical concerns.

NRC Allegation #140

Allegation Description:

Bad welds on stanchions attached to Class I large-bore could fail during a seismic event.

The alleger's opinion is baseless. Ir January of 1978, DR 3537 (Unit 1) and DR 3538 (Unit 2) were initiated to identify discrepancies found relating to full penetration welds on stanchions. All stanchion welds were identified and either replaced or accepted after engineering review and analysis. The discrepancies were also identified on PGandE NCR DCO-78-RM-002 and reported to the RC in PGandE letter dated March 7, 1978, in accordance with 10 CFR 50.55(e). All corrective action has been conducted in accordance with approved procedures and fully documented.

No weld stanchion deficiencies are known to exist.

NRC Allegation #1409

Allegation Description:

Though linear indications were found on a wide flange beam the inspector was not allowed to document the discrepancy because of contractor jurisdictional boundaries.

PGandE is not aware of any case where an inspector was either told or not allowed to identify linear indications in a beam because of contractor jurisdictional boundaries. Inspectors are told to report quality problems, regardless of origin, to the PTGC personnel responsible for that area, or to document the concern in writing so the information can be transmitted to PTGC. In addition, the PGandE Quality Hotline has been established so individuals can report concerns directly to PGandE. No such concerns have been reported.

NRC Allegation #1467

Allegation Description:

Breakdown of the reporting system makes it difficult to write formal reports of QA/QC violations. Field inspectors are instructed to write DCN only rather than DR directly. Also, disposition manner.

This subject was previously addressed in responses to NRC Allegations #1220 and #1364 which were submitted in PGandE letter DCL-84-328 dated October 18, 1984 and which, in turn, reference the response to Allegation III-15 which was submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegations and responses are attached hereto.

NRC Allegations #1220 and 1364

Allegation #1220 Description:

Pullman has verbally instructed inspectors not to write discrepancy reports. These instructions are confirmed by memo.

NRC Allegation Paraphrase:

Over the last few months Pullman verbally has instructed inspectors not to write Discrepancy Reports (DR's). These instructions have been confirmed by a memorandum. This allows PGandE to remain officially ignorant of quality problems during the last few months before commercial operation. That is when it is most significant for PGandE to keep informed so that it can keep the NRC informed. ESD 240 states "All discrepancy reports will be generated by field QA/QC inspectors or engineers." Field inspectors are instructed to write DCN's only, and Pullman QA will determine if a DR is necessary. This instruction is per memoranda and not incorporated into any approved procedure, in violation of another approved procedure for incorporating memoranda into approved procedures.

Allegation #1364 Description:

QC inspectors instructed by management not to document decrepant conditions in formal reports.

This subject was previously addressed in Response No. III-15 submitted in PGandE letter DCL-84-243 dated June 29, 1984. The previous allegation and response are attached hereto.

As is stated in that response, inspectors were never told not to document discrepant conditions in formal reports. They were, however, requested that where it could not be determined whether the condition was actually deficient,

they should describe the discovered condition in a memorandum to management and request guidance as to how to handle the matter before preparing a formal report.

III-15

It is alleged that:

On March 13, 1984, there was a meeting between the Pullman leadmen and Pullman supervision, after which the leadmen told the Quality Control (QC) inspectors that starting immediately, for both Units 1 and 2, QC inspectors were not to write any Discrepancy Reports (DR's, which go to PG&E to be dispositioned) and were only allowed to write Deficient Condition Notices (DCN's), a Pullman in-house form.

They said that even if it should be a DR, to only write it on a DCN form, that Pullman's Quality Assurance (QA) department would review them to see if there were any conditions that required a DR, and that if so the QA department would write them up.

When inspectors asked questions about this, the QC supervisors told them that this new procedure was ordered by Bill Kimmel, the head of the QA department, and that Kimmel would issue a memo shortly.

Kimmel is the QA supervisor, and QA has no direct authority over the day-to-day actions of QC personnel. In addition to this, I am concerned that this new procedure violates 10 CFR Part 21, 10 CFR 50.55(e), and 10 CFR Part 50 Appendix B. (3/22/84 Clewett Aff. at 3.)

The entire issue of DCNs and DRs was previously addressed in PGandE's Answer in Opposition to Joint Intervenors' Motion to Reopen on CQA, Karner and Etzler Aff. at 36-39. That response stated in part that:

> Details of Pullman Power Products procedures for reporting deficient conditions are contained in procedures ESD 268 (Field Procedure for Deficient Condition Notices (DCN), and ESD 240 (Field Procedure for Nonconformance Reporting called a Discrepancy Report (DR)). These procedures have been in effect since 1973 for ESD 240 and 1978 for ESD 268.
>
> These procedures were prepared, reviewed, and approved by both Pullman QA/QC management and PGandE to be in compliance with the Pullman QA Manual section for nonconformance reporting (KFP-10) and PGandE's

Specification 8711. These procedures give the specific details for preparation of a DCN and a DR. The DCN, as identified in ESD 268, is a method for field personnel to identify what they believe to be problems that violate procedures and which cannot be corrected during the normal course of construction. In accordance with the approved procedure, ESD 268, PGandE is not required to review the DCN.

The DCN, by procedure, does require Pullman Engineering concurrence. If a DCN is prepared by engineering, it also requires Pullman QA/QC concurrence. This assures that both Pullman disciplines are aware of the condition, have the opportunity to assure that all items are accurately depicted, and that all necessary information is included in the DCN. The review by a Pullman QA/QC leadman, which is not required by procedure, was implemented to further assure that information is accurate, that all necessary information was included, and to let upper levels of responsibility know of problems that are occurring. This review is not intended to delay submittal of these reports, but is done to prevent further recurrence, to immediately provide additional training and instructions to the responsible parties, and to assure that these reports are not rejected for lack of information at the next level of review. With proper justification, a DCN can be voided at any level of review including that of the QA/QC manager. If the DCN is voided prior to reaching the Pullman QA/QC manager, it is done so only with the concurrence and agreement of the originator or his first line supervisor.

If the DCN is voided at any stage of the process, the original DCN or a copy thereof is returned to the originator. Additional instructions have been implemented to assure that these documents are handled properly and voided copies are kept on file. The DCN can be dispositioned in various ways, one of which is identifying the problem on a DR.

The "new" procedure mentioned by Mr. Kimmel was merely a restatement of the procedure which had long been in effect. This memo was issued to all QA/QC and Engineering personnel by Mr. Karner and Mr. Cornish on March 14, 1984. The actions involved herein violated no regulatory requirements.