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General/Response

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

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D. A. BRAND
VICE PRESIDENT
ENGINEERING

May 17, 1984

PGandE Letter No.: DCL-84-186

Mr. Thomas W. Bishop, Director
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
Docket No. 50-323
Diablo Canyon Units 1 and 2
Responses to SSER 22

DESIGNATED ORIGINAL
Certified By *Not Noack*
FILE COPY

Dear Mr. Bishop:

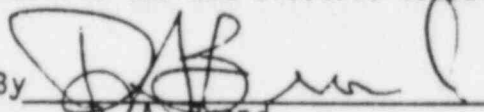
This is in reply to your letter dated April 19, 1984, in which you turned over to PGandE 31 allegations identified in SSER 22. PGandE's responses to these allegations are enclosed. They are true and correct to the best of my knowledge, information, and belief.

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


Subscribed to in San Francisco, California this 17th day of May, 1984.

Respectfully submitted,

Pacific Gas and Electric Company

By 
D. A. Brand
Vice President
Engineering

Robert Ohlbach
Philip A. Crane, Jr.
Richard F. Locke
Attorneys for Pacific
Gas and Electric Company

By 
Philip A. Crane, Jr.

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Enclosures

cc: H. R. Denton
J. B. Martin
Service List

Subscribed and sworn to before me
this 17th day of May, 1984

C. T. Neal-Madison

C. T. Neal-Madison, Notary Public in
and for the City and County of
San Francisco, State of California

My commission expires December 27, 1985.



SEAL

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ENCLOSURE

SSER 22, Allegation #123

It is alleged that:

PGandE did not receive authorization from the Building Commissioner to accept evidence of previous welder qualification.

Contrary to the implication of this allegation, there is no requirement for the Owner or Engineer of a nuclear power plant to obtain approval of welder qualifications from a local Building Commissioner. Inspection of construction of a nuclear power plant, by federal law, does not reside at the local level. In addition, under the AWS Code (AWS D1.1 Section 5.4.2), acceptance of previous qualification of welders is not assigned to the local Building Commissioner but rather to the Engineer. At Diablo Canyon, the Engineer is PGandE. In the one case where welders were qualified offsite, they were qualified to Project procedures by an independent laboratory and subsequently accepted by the Engineer, consistent with the AWS Code. Consequently, there has been no code violation, and no corrective action is necessary.

SSER 22, Allegation #129

All of the concerns contained in NRC Item No. 129 are the result of a letter from an anonymous allegor to Mr. Mark Padovan of the NRC dated January 2, 1984, (Padovan letter). These allegations correspond directly with the previously filed allegations of Mr. Steven Lockert. These concerns are addressed sequentially below.

A. It is alleged that:

Sept 20

1. Deviation from the requirements of contract specification 8711
2. Failure to notify purchaser (PG&E) of past and present deviations
3. Failure to notify the Commission as required by 10 CFR 21.21b)

Addressed memo to Harold Karner, Pullman's QA Manager regarding PG&E's contract specification 8711, Sec. 1, para 7.10.1. stated that all GTAW shall be performed with a power supply equipped with 1) High frequency for arc initiation, 2) Rheostat for stepless control of current.

Research indicated that in the 1977 revision of weld procedures Pullman had failed to include this requirement in their updated Weld Procedure Specifications, WPSs. Further, PG&E approved of the Pullman changes to the weld procedures and in effect ceased to enforce PG&E's own procurement document.

In verbal discussion with Harold Karner I informed him that none of Pullman's GTAW machines could presently meet the specifications of 8711. Harold's reply was "if PG&E doesn't enforce the contract Pullman doesn't intend to." I then informed Harold that in lieu of the high frequency the welders were scratch starting each time the arc had to be initiated thus contaminating the weld with tungsten. I also told him of the defects I was seeing as a result of no current control devices and no off/on switch on the power supplies Pullman was using. The defects occur at the end of the weld cycle when the welder tries to extinguish the arc by pulling the tungsten electrode directly out of the area over the weld pool. The weld pool is kept molten as the arc elongates but then starts to freeze as the arc and magnetic field collapse, oscillating the still liquid pool, and creating a hole at the center point of the weld pool.

PG&E's contract writers were aware of these types of defects typical to GTAW when they wrote 8711 specifying the type of equipment to be used. Certainly a higher level of quality is obtained when using the proper equipment and if this higher level of quality was thought to be obtained when documents such as the FSAR were written: then a problem has occurred (sic).

No reply to my memo has been recorded as of my termination dated 12/15/83. (citing Padovan letter at 1-2.)

The technical background of this allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 27-29.

As discussed in the response, no deviation from contract specification 8711 exists because, as permitted by the specification, PGandE supplies the GTAW welding machines and high frequency units when they are beneficial. All welders using the GTAW process are qualified using the scratch starting method to assure they can make sound production welds. No corrective action is required as a result of this allegation.

B. It is alleged that:

Sept 22

1. Failure to impliment (sic) the quality assurance program as specified in 10 CFR 50, appendix B, criteria II & X.

A welder was going to start welding when I asked him to attach an argon flow meter near the torch in his GTAW process. The welder refused to cooperate saying that as long as there wasn't a holdpoint on the process sheet for it the inspector didn't have to check it. The welder's foreman and my QC supervisor were called in to mediate. The QC supervisor, Merle Edgerton, said he thought my inspection was a bit excessive. I reminded Merle that a 20 CFH flow rate was specified by the WPS and that if I was not allowed to check it, when I thought it necessary, then he could get someone else to do the job.

I was requested to perform inspections elsewhere and left. (citing Padovan letter at 2.)

The technical basis of this allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 33; Karner et al. Aff. at 18.

The welder in question was following WPS 134 which does not restrict the location of the flowmeter. In fact, the flowmeter was installed at the gas bottles on a different elevation. The fact that the alleged was not satisfied with the actual location of the flowmeter does not constitute a breakdown in the QA program. Nor does the fact that the welder refused to cooperate reflect a breakdown of any kind. In this case, the alleged could have ascertained the desired flowrate if he had chosen to look at the flowmeter installed at the bottles. The process sheet does not indicate whether the flowrate was ever checked by the inspector as no such inspection is specifically required. The weld was subsequently visually inspected, and acceptance was noted on the process sheet. Thus, there was no breakdown in the QA program, and no corrective action is required.

C. It is alleged that:

Sept 26

1. Failure to issue and maintain adequate document control as required in 10 CFR 50, appendix B, criteria VI.

I requested a copy of Pullman's welding procedures at least five times from my superiors Gary Sawyer (sic), Jim Cunningham, Russ Nole (sic), Pat Watson, and Harold Karner. Mr. Karner's response was that too many copies of the weld procedures had already been issued and that the logistics of controlling them had become unmanageable (sic). (citing Padovan letter at 3.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 33-34. As stated in the response, there are sufficient controlled copies of welding procedures in the plant, at various locations, which are available to all personnel. No corrective action is required as a result of the allegation.

D. It is alleged that:

Oct. 4

1. Failure to provide adequate control over inspection and process monitoring as required in 10 CFR 50, appendix B, criteria X.

I was requested to inspect a full penetration weld attaching a stanchion to a pipe. Upon arriving I found the craft had welded the cover plate on the free end of the stanchion. I didn't accept the work because I was not given an opportunity to evaluate the profile of the back side of the weld. QC supervisor, Russ Nolle, instructed me to accept the work. I protested that the cover should be removed by breaking the tack welds and the back side of the weld inspected. Russ would not permit the cover to be removed saying that the visual inspector had limitations that sometimes did not allow the inspector to view the back side of full penetration welds.

Started to notice that the welding machines were not calibrated on a regular basis and that tong type portable amp meters were not issued and were rarely seen in the field. (citing Padovan letter at 3.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 22-24; Breismeister, et al. Aff. at 25. As stated in that response, no root pass inspection was required by procedure or code, and there was no need to remove the welded cover for inspection (ESD 215 and ANSI B31.7). Thus, Mr. Nolle was correct when he did not permit the welded cover to be removed.

A welding audit program has been implemented which requires a measurement of actual welding amperage using calibrated tong testers. This audit of each welder is performed on a three month frequency. Audit results, which are documented, show excellent compliance by the welders to the requirements of the welding procedure specifications.

No corrective action is required as a result of this allegation.

E. It is alleged that there was:

Oct 6

- 1) Over-extended (sic) of weld procedure to situation outside scope of original qualification limits. Violation of 10 CFR 50, appendix B, criteria IX.

I was asked to inspect the fit-up of a threaded stud being welded to the containment liner. After looking at the weld procedure being used I determined that welding small diameter studs was not included in the scope of the procedure. I called Harold Karner and pointed out that there was almost no similarity between the original procedure qualified on pipe and the present application.

Harold assured me that the 7/8 procedure was qualified for the situation and that they had welded thousands of the studs using that procedure. I replied to Harold that if Pullman had intended welding thousands of them perhaps a procedure should have been qualified which specifically included the solutions to problems unique to welded studs. It was decided that since I had such deep reservations about the procedure being used another inspector was asked to perform the inspection.

Later, QC supervisor Russ Nolle came out to explain how WPS 7/8 was used to weld studs. Russ told me that the backing strip could be deleted provided a back grind was used. I countered Russ by pointing out that if back grinding was intended then the procedure would have included direction as to what the requirements of the back grind would be.

Further research on this subject has shown that the stud material most often being used by Pullman is a bolt material, A 307. The stud is made by taking an A 307 bolt and cutting off the head, then the bolt is cut with a chisel point and subsequently called a stud. The problem is that A 307 is not a P1 material and can not be used in the present Pullman welding procedure 7/8. (see attachments 1 & 2 for information copy of part of WPS 7/8.)

Further, bolting material A 307 was never intended as a welded stud because the only chemical limitations on the product are phosphorus and sulfur contents. Lastly, the material can not be traced because individual heats of steel are not identified in the finished product. (citing Padovan letter at 3-4.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-6, 11-13. A 307 is considered a P1 material based on ASME Section III and Code Case N-71. Weld joint geometry is not an essential variable. There has not been an overextension of the weld procedure specification beyond qualification limits, and hence, no violation of 10 CFR 50. WPS 7/8 was modified to include back grinding as an acceptable process. No additional action is required.

F. It is alleged that:

Oct. 10

1. Work performed without instructions, procedures, or drawing control in violation of 10 CFR 50, appendix B, criteria V & VI.

I had noted that in the rupture restraint work in unit two fillet welds originally performed by American Bridge had encroached on the areas around bolt holes that resulted in many bolts not seating properly. As a solution the fillet welds were ground back. However, I asked the RR engineer if measures were being taken to revise the weld

size in the area of the bolt on the weld sheets. RR engineer, Dale Warren, replied that to his knowledge the drawings were not being revised. (citing Padovan letter at 4.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Breismeister, et al. Aff. at 38-39. The fillet welds in question are actually fillet caps over full penetration welds. They were in excess of weld size required by design. Authorization to grind was provided on American Bridge Drawings. All grinding was controlled by process sheets to assure that grinding would not compromise the design; therefore, no drawing revisions were required. Since the allegation is incorrect, no corrective action is required.

G. It is alleged that:

Oct 12

1. Failure to update to current criteria as required in procurement document 8833-XR, violation of 10 CFR 50, appendix B, criteria VI.

Upon rejection of out of tolerance washers to criteria set forth in ESD 243 pertaining to hardened steel washers, Dale Warren, the unit two RR engineer found that the information presented in the ESD was out of date. I relayed the information to Harold Karner, the QA Manager, who then failed to notify other inspectors that the ESD was out of date and that new criteria was (sic) in effect. As of December 15 ESD 243 had still not been revised and the other inspectors still did not know the new criteria. (citing Padovan letter at 5.)

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. The revision, which will be issued on or about May 25, 1984, will, inter alia, conform ESD 243 to the present ASTM A436 industry standard. Contrary to the allegation, Specification 8833XR does not have a requirement for updating to current criteria for materials. No further action is required.

H. It is alleged that:

Oct. 17

1. Failure to provide for inspector evaluation of defects found in items verses (sic) the requirements of the procurement documents.
2. Misdirection to inspector by QC supervisor, denial to procurement documents, and intimidation (sic) for performing inspection activities as described in 10 CFR 50, appendix B, Criteria I.

I had found defects in A-490 bolts sent to the field for installation in Rupture Restraint work being performed in unit two. The bolts had forging laps visible (sic) on the head and I had occasionally seen longitudinal (sic) quench cracks on the shaft. I consulted the procedures, ESD 243, and found that the ESD had no rejection criteria for the bolts.

I rejected the bolts and then proceeded to search for the procurements referenced in the ESD to find the proper status of the items in question. While making copies of an ASTM standard in the office Russ Nolle asked me outside for a discussion. Russ said that I would no longer be allowed to look at or make copies of: the AISC Construction Manual, the ANSI or ASTM Standards or the ASME Codes. By seeking information in those documents you are beyond your scope as an inspector, "you have your ESDs."

I replied that ESD 243 did not address inspection criteria for A-490 bolts. Russ said to me "any conditions found outside of the scope of the ESD shall be accepted."

I told Russ that I would not be able to abide by that if the ESDs did not cover the situation, then, I would seek inspection criteria elsewhere. Russ got pissed and said that he and Harold Karner have "had it up to here," pointing to his neck. "You got one foot out the door, Mr. Lockert, one more wrong move and you're gone. (citing Padovan letter at 5.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 21-22; Karner, et al. Aff. at 18-21. As stated in the response, the acceptance (and thus, rejection) criteria for the bolts are contained in the procurement documents and are not required to be in ESD 243. Thus, no corrective action is required as a result of this allegation.

I. It is alleged that:

Oct 20

1. Deviation from the technical requirements included in the procurement documents 8833-XR and AWS D1.0-69.
2. Failure of both PGandE and Pullman to regularly review the status and adequacy of the QA program in violation of 10 CFR 50, appendix B, criteria II.

I had reviewed Pullman's ESD 202, Welding Electrode Control, verses (sic) my own copy of AWS D1.1-83, Structural Welding Code. In the area of storage of low-hydrogen electrodes I had found a discrepancy (sic) in that Pullman's requirements were below those specified in the code.

I sent a memo to Frank Lyautey, assistant QA manager, telling him what I had found and asking him to check his copy of AWS D1.0-69, the document referenced in 8833-XR, to see if we really had a problem. Pullman's ESD stated that the minimum required storage temperature for low-hydrogen electrodes was 225°F while I had noticed that AWS required 250°F.

Some time later I was contacted by Frank and informed that I was correct in that the 69 version of the code also required the higher temperature. Frank went on to assure me that he had personally checked the logs and that no violations had occurred (sic) and that he was issuing a memo immediately to notify all other concerned parties. (citing Padovan letter at 6.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 30-32. On December 20, 1983, Pullman revised its procedure to require storage at 250°F even though tests showed that storage at 225°F would not have an adverse impact on the welding program or the hardware. No further action is required.

J. It is alleged that:

Oct. 24

1. Over-extension of welding procedures outside the scope of original qualification limits. Misuse of prequalified procedures per AWS in violation of 10 CFR 50, appendix B, criteria IX.

I examined the procedure qualification requirements of AWS D1.1 and compared them to Pullman's Rupture Restraint welding program. It appeared to me that Pullman had taken a WPS qualified under the ASME Sec. IX criteria and transferred the qualification to the AWS criteria. To my knowledge this is permissible in that the mechanical requirements of the PQR (tension and bend tests) are transferable to both codes.

However, one of the main points in the application of the WPS to field welding is that joint design is an essential variable in the AWS D1.1 code while in ASME it is not. I started to look at the process sheets coming out to the field and noticed that Pullman was welding a variety of seven different joint designs and calling it all out as one WPS 7/8.

A closer examination of Pullman's RR welding program revealed that they were working with two documents: WPS 7/8 and a Welding Technique Specification called AWS 1.1 (see attachments 6 thru 11 and 12 thru 14.) The welding procedure 7/8 when applied to AWS welding only qualifies the original joint design used in the PQR because joint design is an essential variable. The Welding Technique Specification AWS 1.1 has been used as some kind of prequalified procedure not able to stand on its own but in some way attached to WPS 7/8.

A close look at AWS 1.1 will show how the nature of this document changes:

1. The title of the document says "Welding Technique Specification" but notice that it is also called a WPS on pages 2 & 3 (upper right corner).
2. Note that the supporting PQRs are prequalified. Why would a technique specification require any qualification record? A technique specification has no legal bearing under any code but a WPS surely would.
3. The permissible base metals listed include A-515 and A-588. The former is not listed under the steel specification requirements of AWS D1.1, Table 4.1.1 and the latter requires special welding procedures for impact loading or weathering applications (see note 6 of Table 4.1.1.)

In order for Pullman to use prequalified joint designs for its use in rupture restraints all mandatory code requirements must be met as shown in AWS D1.1, Table E1, not to mention the least of which is a written WPS. Pullman can not use prequalified joint designs because "Welding Technique Specifications AWS 1.1" is not a WPS nor does WPS 7/8 extend into the realm of prequalified procedures because it does not incorporate all aspects of D1.1 either.

My first comments on the apparent discrepancy were with Russ Nolle. Russ said not to get excited because someone had already caught it in an audit. (Could Russ be referring (sic) to audit #35 performed by Harold Hudson back in March of 83?) (citing Padovan letter at 6-7.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-6, 16-21, 24-26, 28 and 33; Karner, et al. Aff. at 25. There was no overextension of welding procedures, as explained in the response. WPS were consistent with AWS D1.1, and the use of the material was approved by PGandE as Engineer. No corrective action is required.

K. It is alleged that:

Oct. 25

1. Attempt to deceive Pullman QC inspector of PGandE's violation of its own procurement documents.
2. Failure to notify the Commission of deviation from procurement document B711, violation of 10 CFR 21.21.

I was still concerned that work was being performed outside the scope of B711, PGandE's contract with Pullman for piping and pipe supports. Recently, I had heard of 200 welds in schedule 10 stainless steel pipe that had failed to meet radiographic standards. I researched the problem by asking the reader of the radiographs, Pullman's Level III NDT Mike Mckray (sic), what types of defects he was seeing. Mike told me that many of the defects appeared to be grouped either at the start or end of weld passes and that because of the thickness of the pipe defects (porosity mostly) larger than the head of a pin had to be rejected.

Thinking that the lack of dated GTAW equipment might be contributing to the problem I called PGandE's NPO Welding Engineer Dave Stupl. Dave had asked for several days to research the B711 contract himself so that this was my second contact with him. Dave told me that B711 was a very old document written at least ten years ago and that I had probably (sic) stumbled on an old copy that had never been updated. Dave referred (sic) me to another PGandE engineer and said I was not to include him in any more discussions on the matter. (citing Padovan letter at B.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 26-30, Exhibit 2, Stupi Aff. As pointed out, there was no procurement contract violation because PGandE supplied the GTAW equipment as allowed in the contract. As discussed in the CQA response, the equipment used for welding was appropriate for the applications and did not contribute to the defects. This allegation is slightly different from the previous allegation regarding the welding equipment. Contrary to the implication, there is no code or specification requirement to have dated GTAW equipment. Regarding Lockert's discussion with Stupi, the best evidence of what the contract specification required was the contract itself rather than someone's knowledge of its contents. These allegations have no merit, and no action is required.

L. It is alleged that:

Nov. 8

1. Failure to recognize a significant condition adverse to quality, failure to take corrective action, violation of 10 CFR 50, appendix B, criteria XVI.

I performed an inspection directly underneath the unit two pressurizer in which I observed old work that would be absolutely unacceptable under any code. Welds were on Rupture Restraints originally built by another contractor, American Bridge, with the manual SAW or, possibly, FCAW process. I brought my concerns to Russ Nolle but he said no, nothing can be done about it because it was another contractor and already accepted. (citing Padovan letter at 8-9.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 41-42 and Exhibit B, Nolle. The alleged was, in fact, advised of the appropriate manner in which to address his concern, i.e., by initiating a Discrepancy Report. As he took no such action, there was neither a "failure to recognize" nor a "failure to take corrective action."

The welds on rupture restraints under the Unit 2 pressurizer have once again been reinspected and reanalyzed after the anonymous alleged's plant tour on the night of April 11, 1984. The results of this review were forwarded to Region V in PGandE letter DCL-84-170, Item 5 (NRC Tag 5). The analyzed welds were found to be cosmetically unattractive but technically acceptable. For example, during this review, the two apparent worst welds identified in the welded connections were evaluated. Although these have a significant length of undercut, approximately 95% of the undercut weld lengths are within the original AWS D1.1 acceptance limits. The remaining undercut is outside the limits of the original AWS D1.1 Code edition but is consistent with current AWS D1.1 criteria in effect since 1980. Further, the effect of the weld discontinuities in the two worst welds in a single weld connection was evaluated and found to satisfy loading requirements. This concern has been appropriately reviewed, and no further action is required.

M. It is alleged that:

Nov. 16

1. Failure to take corrective action to preclude repetition of significant condition adverse to quality in violation of 10 CFR 50, appendix B, criteria XVI.
2. Failure to provide evaluation in a timely manner and coercion to perform inspections to procedures shown to (sic) reasonably questionable, violation of 10 CFR 50, appendix B, criteria II.

Two weeks before I had informed Harold Karner the problems I was having justifying the welding being performed on rupture restraints. Now I was being asked to inspect again to procedures I had shown were questionable.

I told my leadman, Jim Cunningham, what I had found and that I had not received a proper response from Mr. Karner. Until I get one I don't feel I should go inspect. Jim told Russ Nolle and Russ accompanied me to Harold's office.

I explained to Harold my situation. Harold said I was entitled to my opinion but that PGandE had already approved the present procedures. Further, he said I had a choise (sic): I could go out and inspect or I could look for a new job. I informed Harold that I had done everything in my power to get a quality problem corrected and that if he was going to threaten me with my job then I had no real choise (sic) but to go and inspect. (citing Padovan letter at 9.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Karner, et al. Aff. at 26-27. The procedure in place was appropriately qualified and approved, and the condition in question was evaluated in a timely manner. As no coercion took place, no corrective action is required.

N. It is alleged that:

Dec. 8

Temporarily assigned to the area 10 fab shop. The area 10 fab shop also houses the welder qualification test bay so that I had the opportunity to witness some of the welders as they performed their tests. After some questions I had directed at the welders, I noticed that there were perhaps six or seven welders proceeding (sic) through the activities of the test with no QC interaction.

Later on, in the afternoon, after observing more testing with no QC participation I walked into the small office area and struck up a conversation with the production foreman, Art Savacou (sic). I asked Art where the QC inspector was at. Art replied they didn't have one at the moment but that he and Pat Watson had "an understanding." I thought that was pretty interesting so I asked Art if he was qualified as an inspector. Art replied no. (citing Padovan letter at 9-10.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Neary, et al. Aff. at 1-5. As stated in the response, the presence of a QC inspector is not required by code during welder performance qualification. Pullman, in accordance with ESD 216, assigns a QC inspector to:

"Maintain surveillance of welder performance qualification testing, examine specimen testing, record test results, maintain welder qualification records, monitor production welding, and notify the Production Superintendent of re-qualification requirements."

The proper performance of these duties does not require the constant presence of the assigned individual.

Mr. Pat Watson, QC Welding Supervisor, was qualified and performed the surveillance duties for the days in question. Mr. Savacool did not perform any inspection activities. All welders were qualified in accordance with code requirements, and no corrective action is required.

O. It is alleged that:

Dec. 9

1. Failure to provide for assurance that all prerequisites for testing have been met, violation of 10 CFR 50, appendix B, criteria XI.

I learned this morning that the QC normally assigned to the welder qualification tests had quit on December 7 at 09:00. After further observance of tests being performed with no QC interaction, I checked the requirements of Pullman's Quality Assurance Manual and reviewed the statements in ASME, Sec. III.

Wrote memo to Pat Watson, the area 10 leadman/welding qualification supervisor, noting that Bill Bailey was gone and that I had observed an apparent lack of QC participation in the testing. I reminded Pat that the QA Manual's paragraph KFP 15.2 specifically stated that a field inspector shall be assigned to the test shop and that ASME, Sec. III, paragraph NA 3764.1d would not allow a production foreman to determine the quality of production welders.

When Pat came on his walk through the fab shop I handed him the memo. Pat after reading the memo would not accept it and walked off. Sometime later Pat returned and finally accepted the memo.

At approximately 14:00, Frank Lyautey and Chris Neary appeared and wanted to know what was going on. Frank is the assistant QA manager and Chris is Pullman's welding engineer from Williamsport, PA. I related the story and told Frank that I had notified the proper person in the chain of command about the apparent discrepancy (sic). Frank explained that Bill Bailey had quit and that a new inspector was scheduled to start in the welder qualifications on the 12th. In the absence of either inspector, Pat Watson was performing duties as field inspector in the test shop.

I admitted to Frank that I had seen Pat Watson in the test bay twice on Thursday, the 8th, but that for the majority of the time I had noted no QC at all. Frank assured me there was no problem and then Pat Watson joined us and he assured me the inspections had been performed. I asked Pat what his intentions were regarding the welders I had seen qualifying with no QC around. Pat said he had no requalification tests in mind because there was no quality problem. Frank then asked me to join Chris Neary and add any comments I had to Chris' revision of Pullman's rupture restraint welding.

My discussion with Chris covered his intentions to:

1. Restrict application of WPS 7/8 to the original joint design shown in the PQR, (Note that there is no joint shown in the PQR but only a reference to sheet 2 of 10?)
2. Use of prequalified procedures for all other applications.

After examination of Chris' notes I brought up the point that he intended to use the same eight or nine prequalified joint designs they had been using before but that he was still grouping them all under one procedure number, AWS 1.1. I said this could be confusing and that it did not appear to satisfy the requirement of a written procedure for each procedure. For instance, how can a single bevel corner joint have the same written procedure and number as a double V butt weld that requires back grinding and welder access from both sides?

I reminded Chris that under AWS joint design is considered an essential variable. Chris did not see that this was a problem. (citing Padova letter at 10-11.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Neary, et al. Aff. at 1-5; Breismeister, et al. Aff. at 1-6, at 1-6, 16-21, 23-26. Regarding the first portion of the allegation, there is no code requirement for QC participation during welder performance qualification and KFP 15.2 does not "specifically

require the assignment of a QC inspector to the test shop". Contrary to the second portion of the allegation, it is neither confusing nor a code violation to have more than one joint configuration addressed in a WPS. No corrective action is required.

P. It is alleged that:

Dec. 12

I reviewed the events leading up to the confrontation on the 9th and determined that there still existed some doubt as to whether the qualification tests had been performed properly. Frank Lyautey and Pat Watson had personally assured me that there was no problem, yet, they had not willingly showed (sic) me evidence of the inspection records. In my own mind several questions remained to be answered:

1. Why had I observed the qualification tests being performed with no QC including Pat Watson present?
2. Why did Art Savacou (sic) the production foreman who had appeared to be running the show refer to an "understanding" with Pat Watson.
3. Did Harold Karner know of the problems I had witnessed in the test shop.

I referred (sic) to the QA Manual and found instructions that said the QA manager was to be informed of problems affecting quality. I initiated DCN 1/1640-021 that told of what I had observed and that it appeared Pullman was performing work outside the scope of its own QA Manual. The Deficient Condition Notice required an engineers (sic) signature to be submitted so I asked Mike, the area 10 engineer, to cosign the DCN.

Mike declined to sign the DCN because it showed no hard evidence of a hold point being passed. Mike did say, however, that if I did provide evidence then he would sign the DCN. (citing Padovan letter at 11-12.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Neary, et al. Aff. at 1-5; Karner, et al. Aff. at 27-28. As stated in the response, a QC inspector is not required, by code, to be present during welder qualification tests. Pullman QA Manual, Section KFP-15, paragraph 15.2, only requires that a QC inspector be available for "Qualification and certification of all welding personnel in accordance with ASME Section IX for the process and position used." Mr. Pat Watson, QC Supervisor, was performing the duties of a QC Inspector for welder qualifications during the days in question. The "understanding" between Mr. Watson and Mr. Art Savacool, the Production Foreman, was that the performance tests would be stopped and held at QC inspection points by Mr. Savacool if Mr. Watson was not immediately available to review the work performed.

The draft DCN was not cosigned by the Area Engineer because it was his opinion that no evidence of a discrepancy existed.

Since all requirements for welder qualification testing have been met, no corrective action is required as a result of this allegation.

Q. It is alleged that:

Dec. 13

1. Failure to provide inspector access to records showing that a function pertaining to quality was adequately performed, in violation of 10 CFR 50, appendix B, criteria I.

After informing RR engineer Dale Warren that I would not accept their previous performance of a stitch (sic) weld observed on the construction of square beams, I decided that I would inspect the records of the test shop during the time of Bill Bailey's absence.

I went to the test bay and explained to Art Savacou (sic) that I had reason to doubt that the welder qualification test surveillance inspections i.e. materials, process, position, fitup, rootpass, WPS parameter verification, final visual, bend tests had been performed.

Art refused me access to the records saying that only his direct supervision could look at the records. I informed Art that by doing so he was denying a QC inspector the right to inspect records. Art's reply was "what are they going to do - put me in jail?"

I left the test bay and contacted Pat Watson asking to see his records for Dec. 7, 8, & 9 concerning welder qualifications. After some discussion Pat showed me what he had, the records showed a summary of the welders who had qualified, who passed, who failed. I told Pat that this was just a summary and that the records did not show whether (sic) the required inspections had been performed. Upon leaving, I reminded Pat that I was still waiting for a written response to memo. (citing Padovan letter at 12.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 28-29 and Exhibit 5, Savacool Aff.; Neary, et al. Aff. at 2-3. As discussed in that response, the Production Foreman's actual comment in reply to Mr. Lockert's demands for weld records can be attributed to Mr. Lockert's attitude and the fact that the records were neither in the Production Foreman's control, nor were they his responsibility. Also, contrary to Mr. Lockert's claims, the tests were properly monitored and the results were documented. Mr. Lockert was shown those records. Mr. Lockert's subsequent memo on the subject was an

informal method of communicating his concern and was responded to by an informal verbal reply. This seemed to satisfy Mr. Lockert at the time. No corrective action is required.

R. It is alleged that:

Dec 14

1. Failure to notify authorized personnel of changes in Quality Assurance Program in violation of 10 CFR 50, appendix B, criteria VI.

For the events of the morning supposedly causing my termination see Pullman's Termination Notice to Payroll Dept., pages 1 and 2 and my grievance addressed to Mr. Stieger, pages 1-5. (Attachments 15 through 21).

In the afternoon after checking a portable rod oven that had yielded repeated violations of the minimum temperature allowable for low-hydrogen electrode storage, I asked the welder to get another rod can because this one appeared defective. The QA rod room attendant (sic) came over after checking the can and asked what the problem was. I replied that it was below the 250 F min. required by AWS D1.1.

He said that the ESD only required 225 F. I replied that ESD 202 had been changed back in October. The QA rod room attendant didn't believe me because he had n't (sic) received a memo on the subject. I showed him my copy of D1.1 and he agreed that was what the code read but that he couldn't change the rod oven temperatures until he recieved (sic) word from his supervisor. (citing Padovan letter at 13.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breisemeister, et al. Aff. at 30-32.

As stated in that response, ESD 202 was initially written to ASME Code standards and not those of AWS D1.1. Though there is adequate technical justification for a minimum rod oven temperature of 225°F, it is now a requirement that Pullman maintain minimum rod oven temperatures of 250°F. This requirement, to which Mr. Lockert was inspecting, was not formally incorporated into ESD 202 until December 20, 1983. No further action is required.

SSER 22, Allegation #136

It is alleged that:

Foley audit findings were not properly handled. (Two examples were provided by the allegor.) The alleged problem seems to be that Foley response to the audit did not really address the finding.

This item of concern pertains to the origin and disposition of Audit PA125, finding 10, which was part of an audit conducted January 17 through January 26, 1983. Applicable H. P. Foley procedure QCP-17 and Audit PA125, finding 10, and its disposition have been examined.

The disposition of finding 10 by the Foley QA Director was appropriate. The finding stated that QC inspectors were not signing off hold points on the Work Process Traveler. As stated in procedure QCP-17, the Work Process Traveler is included in the work package and is used to identify the appropriate inspection procedures to production personnel so that they know which hold points QC will be inspecting. Inspection hold points are documented on inspection forms specified in the inspection procedures which are referenced

on the Work Process Traveler. QCP-17 requires a sign-off on a Work Process Traveler if there is a required inspection hold point for which there is no procedure. The procedure also allows, but does not require, the Work Process Traveler to be used as objective evidence of hold point compliance in lieu of the inspection forms if an inspector so elects. None of the examples cited in finding 10 required a special procedure, and in each case, the inspection forms, rather than the Traveler, were used to show hold point compliance. Consequently, the Traveler was not used as a quality control document, and disposition was proper.

Even though investigation of this specific concern has not revealed any improper dispositioning of audit findings by H. P. Foley, PGandE has elected to conduct a special quality assurance audit to ensure that there is not a generic concern. The audit is scheduled to be completed by June 1, 1984.

SSER 22, Allegation #137

It is alleged that:

Foley did not audit procedure adequacy.

The H. P. Foley Quality Assurance Department has performed audits of their own procedures to ensure compliance with specification requirements (As examples, reference H. P. Foley audit nos. PA-8, PA-17,, PA-74, PA-75, PA-111, and PA-112.) During 1983, Foley failed to audit its procedures as discovered in the Foley Corporate Audit dated March 25, 1984. Corrective action to ensure compliance, in the form of retraining, has been implemented.

PGandE, rather than H. P. Foley, is the responsible organization for reviewing contractor procedures to ensure compliance with licensing commitments, standards, codes, and contract specifications. This is accomplished by PGandE review and approval of H. P. Foley procedures and revisions prior to implementation.

The following describes the development and revision process utilized by H. P. Foley:

1. Procedures are prepared by the H. P. Foley Engineering Department in accordance with their interpretation of standards, codes, contract specification requirements, and proper construction practices. (H. P. Foley Procedure QCP-0.)
2. This procedure is then reviewed by the H. P. Foley Quality Department to ensure that applicable inspections are incorporated to document the work activity properly and ensure compliance with the quality requirements of the contract specification. (Ibid.)
3. When all of the applicable comments have been incorporated into the procedure, it is then forwarded to the H. P. Foley Engineering Manager, Project Manager, and Quality Director for final internal review and approval and transmittal to PTGC for approval prior to implementation. (Ibid.)

4. The PTGC Resident Engineer is responsible for review and approval of all procedures as required by the contract. PTGC Quality Control is required to approve all special process procedures. In the normal review cycle, PTGC QC assists the Resident Engineer in reviewing all procedures. PTGC QC also may use specialists to review and approve special processes, such as welding. (PTGC Procedure DCP-4.)

Because procedures receive a multilevel review and approval for compliance with licensing commitments, standards, codes, and contract specification requirements, no further corrective action is required.

SSER 22, Allegation #139

It is alleged that:

Foley improperly performed tubing fabrication (socket welding and bending).

The following specific issues have been abstracted from the documentation provided in support of the allegation:

Performance Qualification of Welders

1. Do welders using the Gas Tungsten Arc Welding (GTAW) process and who have qualified with inert gas backing also qualify for situations without inert gas backing?

ASME Section IX, paragraph QW-351, states "A welder shall be requalified whenever a change is made in one or more of the essential variables listed for each welding process." Inert gas backing is listed as an essential variable in paragraph QW-356. However, paragraph QW-408.8 states that, in regards to the omission of inert gas backing,

" . . . requalification is not required when a qualified WPS is changed to omit the inert gas backing and this procedure is used only for a single-welded butt joint with a backing strip or a double-welded butt joint or a fillet weld." Therefore, under this provision, Foley welders qualified on groove joints with purge gas may weld socket joints without purge gas, provided they work in accordance with a qualified WPS, as was the case here.

2. Does the qualification of welders with groove weld test assemblies also qualify them to weld all fillet welds, including socket fillets?

Paragraph QW-303.5, Article III, on Welding Performance Qualifications states: "Welders who pass the required tests for groove welds shall also be qualified to make fillet welds of any size on base metals in all thicknesses and pipe diameters, within the limits of the welding variables in QW-350." Therefore, H. P. Foley's qualification of welders on groove welds also qualifies them for socket fillet welds. The code requirement for tube socket weld qualification has been met and/or exceeded by a groove weld qualification on pipe for all positions.

The effectiveness of the welder qualification program is best gauged by the quality of the installed hardware. This allegation relates principally to the Reactor Vessel Level Instrumentation System (RVLIS). The NRC Staff has previously examined this system (Inspection Report Nos. 50-275/81-04 and 81-10) and found nothing of particular significance or concern. The absence of discrepant socket welds indicates that welder qualification meets code intent and requirements. The background data supplied with the allegation indicates only examples of poor welds which were "cutouts." Consequently, rather than showing a faulty welding program, the only poor welds pointed to by the allegor had been previously identified by the jobsite welding, QC, or QA programs and had been removed, thus demonstrating a properly functioning welding program.

Gas Purging

Section 4 of Specification No. 8802, Paragraph 2.6.2, requires that stainless steel tubing welding be accomplished by the Gas Tungsten Arc Welding Process (GTAW) and that during welding, the inside of the tubing must be purged with argon. A specification change request to modify this requirement has been submitted to Project Engineering for processing. Two Inspection Reports (IR 8802-1861 and IR 8802-1862) address the issue of using gas backing purge during welding of stainless steel tubing. Both of these IRs were superseded by MCR 8802-1016. In this MCR, the welder either did not use backing gas or was unable to maintain 15-20 CFH backing gas flow during welding due to welding against a closed system.

PGandE Minor Variation Report (MVR) E-2775 defined the problem using the special case of stainless steel tubing socket welds: "H. P. Foley Company, while making stainless steel socket welds, omitted the argon purge requirement." The MVR was dispositioned with a response that "ASME Code does not require argon purge for welds which do not have roots in contact with an oxygen atmosphere (i.e., socket welds)."

Engineering Disposition Request M-2399 was written to ascertain whether it was acceptable to include paragraph QW 408.8 of Section IX provisions for socket welds in each Foley GTAW WPS. It was stated that there are times, such as in the last weld of a capillary system, where it is impossible to use an interior purge.

The ASME Code, Section IX, which governs welding qualifications in QW 408.8, allows WPS which were qualified with purge gas to have purge gas deleted for fillet welds, welds on backing, and back gouged welds. Socket welds meet the QW 408.8 requirements for deletion of purge gas. Therefore, such purge deletion, as described above, is code acceptable. It is impossible to purge for closure welds in socket tubing systems, and the specification requirements were properly waived by the Engineer. It should be noted that once the air has been purged, the purge gas flow rate may need to be severely reduced or stopped to allow the weld to be closed. In such cases, continuing the gas flow would develop excessive gas back pressure which would blow the molten metal out of the joint. Purge flow rate is not an ASME Code essential variable for stainless steel welding and has little or no technical

significance. The need for purge gas during stainless steel socket welding is largely cosmetic. The purge gas does not affect the mechanical test results obtained in weld qualifications.

The Class I stainless instrument tubes are subjected to liquid penetrant examination to detect cracks and other defects; they are also subjected to a pressure test to reveal any leakage. The pressure test is conducted at a minimum of 1.25 and a maximum of 1.50 times the design pressure. Based on these facts, the cosmetic purpose of purging, and the positive examination and test results, there is no concern for tubes which may not have been purged.

Tube Bend Thinning

The allegation regarding tube bends with 50% wall thickness reductions has not been supported by any specific detail; therefore, specific comment is not possible. The material provided by NRC indicates that this allegation concerns instrument tubing in the RVLIS System.

DCP has been unable to locate any cases where a 50% wall thickness reduction was observed in RVLIS tubing bends. In addition, Project GC conducted a survey of RVLIS tubing bend radii in July 1983. The amount of wall thickness reduction in bend areas is directly related to the bend radius.

The GC survey consisted of a walkdown of the Unit 1 RVLIS System and a visual check of all exposed bends, with the exception of tubing in the containment reactor cavity. None of the Unistrut channel was opened to examine tubing inside; however, the tubing was "laid" in the channel and sharp or small radii bends are not normal in this type of installation.

The survey found that, although some bends were as small as $3D$, bends, in general, were $5D$ or greater, where D is the tube diameter. As part of an analysis regarding the breathing air system, a table was developed in August 1983 which demonstrates that $3D$ bends are acceptable from a wall thickness reduction standpoint. The table was derived from codes, manufacturing data, and calculations and is based on tubing applications with design considerations equivalent to RVLIS conditions. The table is attached as Exhibit 1.

Foley controls wall thickness reduction by complying with the bending requirements of Specification No. 8802 and Foley procedures. Specification No. 8802 prohibits tube bends which are wrinkled or flattened, and, for longer tubing sizes, requires the use of a bench-type bender having a standard radius block.

These measures provide indirect controls to produce bends of sufficient radius to prevent unacceptable wall thinning, particularly in the small diameter tubing of the RVLIS System. Direct measurement of the tube wall is unnecessary and is not required by the specification.

Summary

The concerns expressed in this allegation are without technical merit, and no corrective action is necessary.

SSER 22, Allegation #140

It is alleged that:

Foley used material purchased for one contract on another.
(No specific examples were provided).

There is no technical, contractual, quality control, or economic reason why material purchased on one contract cannot be installed in accordance with another contract, as long as all specified material requirements are met.

In fact, items of material are often purchased to the requirements of one specification and used in performance of work activities under another specification. This occurs, for example, with weld rods and structural steel shapes, as discussed below:

Weld Rods

Weld rods are generally purchased under Specification No. 8802; however, weld rods are utilized to perform work activities in all specifications.

Structural Steel Shapes

Most structural steel shapes are purchased to the requirements of Specification No. 8833XR. The material is used in work activities under Specification Nos. 5422, 8802, 8827 and 8833XR. The only special requirement for structural steel shapes is the addition of Charpy tests for certain applications. All steel shapes which do not have Charpy requirements are marked to preclude incorrect installation.

All materials are purchased and controlled through installation in accordance with H. P. Foley's approved QA Program and Procedures to ensure that the material installed meets the requirements of the applicable specification.

This allegation has no merit, and no corrective action is required.

SSER 22, Allegation #141

It is alleged that:

Foley performed transverse welding across beams
(Installation of Unistrut). [No specifics were provided.]

This allegation does not contain any specific concerns.

Contrary to the implication of the allegation, welding of Unistrut members to beams, transversely or otherwise, is an acceptable practice provided that

qualified welders and qualified welding procedures are used. AWS D1.1 does not prohibit transverse welding across beams. This type of weld is subject to normal inspection requirements, and no specific problems with this type of weld have been identified.

No corrective actions are required.

SSER 22, Allegation #143

It is alleged that:

Foley did not torque beam clips at installation.

As indicated in the interview record, this allegation relates to the use of beam "clips" for type S-221 electrical raceway supports. The concern was expressed that some, but not all, of these supports were welded.

Type S-221 raceway supports are attached to structural beams with beam clamps, Unistrut Nos. P2785 and P2786. These clamps rely on friction to resist horizontal (lateral and longitudinal) loads. In the verification program, design loads of all S-221 clamps were calculated. Based upon analysis, a slip resistance capacity of 105 lbs was established. When the design loads were less than 105 lbs, frictional resistance, which was provided by torquing the clamp's U-bolts, was used to carry the loads. DCN No. DCO-GE-2593 required all support type S-221 beam clamps to be torqued to 10 ft-lbs and required the nuts to be tack welded. Design calculations show that 105 lbs of frictional resistance is achieved if only one of the four clamp nuts was torqued to 9 ft-lbs. Thus, for S-221 supports with design loads less than 105 lbs, the design is very conservative.

In cases where the design loads exceeded 105 lbs, the support strut members were welded directly to the beams. This welding eliminated all reliance on the beam clamps. Thus, only those S-221 raceway supports with design loads greater than 105 lbs required welding, which explains why only some of the S-221 supports were welded. No corrective action is necessary.

SSER 22, Allegation #144

It is alleged that:

Foley installs P110 conduit clamps too close to channel edges and they may slip out.

The conduit clamps used at Diablo are installed in accordance with manufacturers recommendations. A snug friction fit is obtained by the use of these clamps. The DCP verification of raceway supports included review of the adequacy of conduit clamps. Design loads on the clamps were calculated and compared to allowable clamp loads. The allowable clamp loads were established through tests performed by Unistrut (Unistrut Test Reports #C-13-H, dated October 6, 1977 and #C-120, dated June 10, 1982) and Superstrut (Anamet Labs Test Report dated June 16, 1977). Furthermore, additional tests were performed by Engineering specifically for the Diablo Canyon Project (ANCO Test Report # A-000041, dated October 1983). In cases where potential clamp loads exceeded the allowables, modifications were made to bring the clamp loads under the allowables. During verification program walkdowns of the raceway supports, a large sampling of these clamps, used in various support

configurations, was checked and rechecked. No evidence of clamp slippage was found. Clamp inspections, tests, and verification program calculations have demonstrated that the clamps will not slip under design loads and, therefore, the distance to the edge of the Unistrut is immaterial.

In summary, the use of conduit clamps at Diablo Canyon has been shown through inspection, calculation, and tests to meet the design criteria. No corrective action is required.

SSER 22, Allegation #145

It is alleged that:

Foley did not specify materials in details - improper bolt heads may have been used. (No specifics were provided.)

The implication of this allegation is that Foley improperly used square-headed bolts in the course of attaching cable trays to raceway supports and that, as a result, wires may have been damaged. Contrary to this implication, the use of square-headed bolts was authorized as an alternative method of attachment where such bolts were set no higher than the raised ribs of the bottom of a cable tray and, therefore, could not cause damage to wires in the tray.

(Drg. No. 050029, Sheet 140, Note 31B.)

Prior to pulling wire, the cable tray is inspected to ensure that it is installed in accordance with the specifications and is free of sharp edges or foreign materials. Rather than directly pulling the wire across the tray bottom, rollers are used. For short runs, the wire is not pulled but rather

is directly laid in by hand. After the wire is pulled over rollers, it is then laid in the tray, bundled by circuits, and, where possible, secured to the cable tray. Each wire is rung out and tagged with the proper identification on each end. Each wire is then "meggered" and, if acceptable, released for termination. Upon termination and release for testing, the associated devices are tested to ensure proper functioning.

The scope and depth of the installation program provides reasonable assurance that any defective or faulty installation practices or results will be noticed and corrected. There are no known instances where wires were damaged by sharp edges in cable tray hardware. Thus, this allegation has been addressed, and no corrective action is planned.

SSER 22, Allegation #148

It is alleged that:

Foley Q.C. identifying unsatisfactory work in progress were told to wait until completion, then reject. (No specific examples were provided by the allegor.)

Discussions have been held with the Foley Quality Control Director and Foley Quality Control inspection and production personnel regarding this allegation. During a meeting held on December 16, 1983, with three QC inspectors and their supervisors, a concern was raised that production foremen were not allowing inspectors to identify and obtain corrections to deficiencies observed on work in progress. These discrepancies were considered improper and unacceptable by an inspector and were identified prior to "designated hold points" specified by the procedure.

At the meeting, inspection personnel were not directed to overlook deficiencies, or to fail to document deficiencies during the in-process inspection at "designated hold points," or to wait until the final inspection before rejecting work. While the Foley QC Director did indicate a preference that inspectors, where possible, use hold points in order to allow construction forces to correct routine in-process deficiencies, he also stated that every inspector had the authority to hang a red tag on an item any time the work had proceeded past the bounds of the applicable procedures. The QC Director also stated that the QC inspector could wait until the hold point inspection to decide whether or not to reject the item. At the hold point, the inspector had the authority to reject work in progress and, if necessary, write a non-conformance report.

This matter and its resolution have been confirmed with the inspector who originally had requested the meeting. This individual was satisfied with the responses he received from the QC Director.

Based on this review, it is concluded that no safety issues are involved as a result of this concern. It can be seen on the basis of the accurate, first-person information provided by all personnel present at the meeting, that this concern reflects a hearsay misunderstanding of what was stated by the Quality Director of H. P. Foley. No further evaluation or corrective action is required.

SSER 22, Allegation #149

It is alleged that:

Foley did not submit HVAC as-built information during 1981/82; as-built may not be checked against design.

H. P. Foley procedures allow construction of HVAC supports within pre-established tolerances. When an existing design cannot be constructed within such tolerances, the Foley procedures require design revisions. Foley procedures, however, did not require submittal of the as-builts to PGandE, unless specifically requested. A review of Foley document control records shows that, during the 1981-82 time period, as-built drawings of supports which were changed were transmitted to PGandE and returned approved; not all design changes, however, were requested to be as-built by PGandE.

Nevertheless, in the verification program, DCP requalified all of the Class I ducts and duct supports. This verification was initiated in late 1982 and extended through most of 1983. All of the Class I ductwork was walked down and as-builts were made for all ducts and duct supports. Based on these as-builts, DCP verified the adequacy of the supports. For those supports not requiring modification, the as-builts became final. For ductwork and supports requiring modification, DCNs were issued. After completion of the modifications, final as-builts were prepared by Foley for all modified supports. The final as-builts were then submitted to and approved by Engineering. Thus, the 1983 walkdown verification made any apparent lack of 1981-82 as-builts an academic issue.

In summary, Foley did submit as-built information during the 1981-82 time period. Further, as confirmed in the verification program, the as-built conditions of all of the Class I HVAC duct supports have been incorporated into the design calculations.

Therefore, there is no technical or quality concern, and no corrective action is required.

SSER 22, Allegation #150

It is alleged that:

Foley production may have falsified structural steel and tubing heat number records. (No specific examples were provided.)

Quality Control maintains the material identification records and not "production". There is no concern for the adequacy of the material because only preapproved material is released to production for use.

When production withdraws material, they are required to transfer the material identification from the parent stock to the withdrawn stock. Quality Control, as part of its inspection activities for this work, checks the material identification information on the finished work against the appropriate log. The Structural Steel Heat Number Log or the Etched Fitting Code Number Log are the documents used to maintain identification to the purchase order. If any discrepancies are identified, QC will take appropriate corrective action.

The maintenance of identification and control of material is a requirement in PGandE Specification Nos. 8802 and 8827, which govern the installation of instrument tubing and HVAC. H. P. Foley accomplishes this through quality procedures for receiving inspection, documentation review, and identification of heat numbers to purchase orders by stamping, tagging, or color coding material (Ref. H. P. Foley Procedures QCP-2, QCP-2A, QCP-3, and QCP-4). If the identification transfer by Production is inadequate, the QC inspector has two avenues of disposition depending upon the magnitude of the problem--either by generation of a nonconformance report or on the inspection report.

PGandE QA has audited this activity and has not found any indication of attempts to falsify material traceability. (Ref. PGandE audit No. 83549A). During the audit there were two pieces of material for which H. P. Foley could not produce the documentation. Audit findings were written. Foley researched the items and found the documentation, and the audit findings were closed.

This allegation is, therefore, addressed, and no further action is required.

SSER 22, Allegation #151

It is alleged that:

(1) Foley installs too many conduits on supports; (2) inspection reject rate is too high for supports. (No specifics were provided.)

The first concern is with raceway support loading. This concern was originally addressed in 1981 (PGandE NCR No. DC1-81-QA-N003) and disposition has been completed. PGandE Drawings 050029 and 050030 specify the loading

allowed for each type of raceway support by area and elevation. The loading requirements from the PGandE drawings referenced have been incorporated into the H. P. Foley Quality Procedure QCP E-9. The Raceway Inspection Work Sheet (HPF/RIWS) documents the raceway support requirements that the inspectors use to check the support to ensure proper conduit loading. Most conduit supports in the plant are loaded to about 50% of the allowable load. Numerous walkdowns have been conducted by Engineering in relation to conduit supports during the course of the verification program. In addition, the NRC has inspected several hundred conduit supports. The verification program and NRC inspection activity, all performed after contractor QC acceptance, identified no instances of overload of conduit supports. This portion of the allegation has been addressed, and no further corrective action is planned.

The second concern expressed is with the high reject rate for supports during construction. This is subjective matter. It is unclear as to just what the allegor believes is an acceptable rejection rate. However, the fact that raceway supports were rejected in accordance with approved procedures clearly demonstrates that the Quality Control program was effective and functioning. All supports were inspected and accepted by HPF Quality Control inspectors prior to the completion of a work package and, subsequently, were accepted by the verification program. As a consequence, no further corrective action is necessary.

SSER 22, Allegation #152

It is alleged that there are:

Concerns with installation of P1331 conduit clamps (torque achievement, relaxation, excess).

It appears that the alleged is referring to torquing bolts in a fitting, Unistrut No. P1331, used in a number of raceway support configurations.

This fitting is a four hole, stiffened connection angle used to join strut members that meet at a 90-degree angle. The adequacy of these connection angles and the torque on the associated connection bolts of all raceway supports were extensively reviewed during the verification program.

The torquing requirements for connection bolts used in raceway supports were developed from a testing program (ANCO Test Report #A-000126, dated April 1984), which included slip capacity tests for various torque values. This testing program included measurement of the slip capacity of connection bolts when torqued to 85 ft-lbs. The test results were then used in the raceway support calculations to qualify the connections. Also included in the testing program was the measurement of bolt relaxation. Based on the test results, it was concluded that no significant relaxation of the connection bolts occurs. Thus, these tests demonstrated that the performance of bolts torqued to 85 ft-lbs is acceptable.

In cases where engineering analysis required bolts to be torqued to higher values, DCNs were issued. Where bolts were not accessible, or where the required torque was not attainable, this information was submitted to Engineering as a part of the normal review process. Typically, the engineering evaluation of these data included a site visit to examine areas where the required torque value had not been attained. In some cases, special adapters for the torque wrenches were made to achieve the required torque. In other cases, the connections were welded in lieu of bolt torquing. All of the activities described above which pertain to each affected support are fully documented.

In summary, the use of P1331 connection angles with connection bolts torqued to 85 ft-lbs has been thoroughly evaluated in the verification program. Tests have demonstrated that the use of 85 ft-lbs of torque is appropriate. The effects of bolt relaxation were also accounted for in testing programs. Connections containing bolts that could not be torqued to the required value were appropriately addressed. Thus, this use of bolted P1331 connection angles is acceptable.

The technical issues have been properly addressed by Project Engineering, and no further corrective action is required regarding this issue.

SSER 22, Allegation #153

It is alleged that:

Foley specifies 1/8" welds on 3/32 clamp material.

Cable trays are attached to raceway support members with "hold-downs" that clamp onto the trays and bolt to the supporting strut members. As a result of the verification program, welds were specified (by Engineering, not by Foley) to strengthen the connection of some of the clamps to the strut members. The support referenced in the allegation (Support No. 26-91-5-247, DCN No. DC2-EC-18034) is one of these cases.

Welds of 1/8 inch were specified for use with the joint configuration shown in Figure 1 of Exhibit 2, attached. For this configuration, making a 1/8 inch weld to a 3/32 inch clamp plate is acceptable and is in conformance with the AWS D1.1 welding code.

This clamp modification was specified for only a few raceway cable tray supports in Unit 2. When Foley began construction of these modifications, they found that the existing clamps were not wide enough to place the specified weld as the joint configuration shown in Figure 2 of Exhibit 2, attached, actually existed. For the Figure 2 joint configuration, placement of a 1/8" weld on the end of the 3/32" clamp plate would have been inappropriate. However, in the course of the normal DCN review process, Foley initiated an Engineering Disposition Request, notifying Engineering of the

actual condition. Engineering then revised the design. The existing clamp plates were replaced with wider clamp plates, restoring the Figure 1 joint configuration. Proper welds were then made. Alternately, in a few cases, the clamp was replaced with a clip angle that bolted to both the tray and the strut, thus eliminating the need for welding.

This allegation has been properly addressed by Engineering, and no corrective action is required.

SSER 22, Allegation #155

It is alleged that:

Welding on embed plates causes distortion, may damage plate or anchors.

Welding on the front of embed plates causes little or no concern for the reverse side, especially Nelson stud anchors. The studs are composed of plain, low carbon steel with good ductility. Stud welding process control tests at the start of each production period require that two studs be subject to severe bending, which demonstrates the ability of the stud anchors to stretch and accept deformation without failure. These bend tests also demonstrate the capability of the stud welds to accept loads in excess of the stud yield point without failure. As there was little noticeable deformation or warpage of the embed plates, this is an indication that the anchors held.

A slight warp would not be a concern because, as stated above, the materials are ductile and can accommodate distortion. H. P. Foley NCRs 5422-95, 5422-96, and 5422-97 identified that the separation between the plate and the concrete was 1/8 inch. This was evaluated and the concrete was repaired in accordance with H. P. Foley Procedure QCPC-11.

The principal effect of welding near the edge of 3/4-inch thick embed plates is that the welding heat calcines or spalls some concrete. Because concrete is a poor heat conductor, the amount of concrete which is heated to a sufficiently high temperature and for sufficient time to be calcined or spalled is severely limited. The extent of calcined or spalled concrete is readily determined during the concrete repair chipping. Because the embed plates are relatively large, 12 inches x 12 inches or greater, and thick, the heat from the relatively small welds of concern dissipates readily through the steel and to the atmosphere with little or no significant heating on the embedded side of the steel. In the three specific cases identified in the allegation, there was nothing to suggest a concern beyond that identified in the above response, i.e., repair the damaged concrete. The corrective action in those cases was appropriate.

A generalized corrective action to mitigate problems of this type was set forth in D. A. Rockwell's memo (DCC 6124) dated August 22, 1983. In that memo, three new requirements were described to deal with the problems arising from heat spauling of concrete:

1. For fillet welds 1/4" and larger, "skip welding" is required to reduce heat build up and minimize distortion of supports, stiffeners, etc. to embedded plates.
2. For partial and full penetration welds or when preheat is required for welding or when preheat is required for welding of embedded plates, a welding sequence plus a maximum inner pass temperature is required. This sequence procedure is to be approved by a PTGC Welding Engineer prior to all welding operations.
3. Protection of the concrete is mandatory during flame cutting operations for protection from molten slag. Wet insulation blankets are acceptable.

H. P. Foley confirmed the requirements with PGandE by EDR 1430, dated September 13, 1983. These requirements were then included by H. P. Foley in its welding procedure QCP-5A, revision PCN 25, which was approved by PGandE on February 2, 1984. No further corrective action is required.

SSER 22, Allegation #168

It is alleged that;

Foley did not properly grout base plate anchor bolts.

Apparently, this allegation is the result of a misunderstanding regarding the procedures for placement of Ceilcote grout beneath floor-mounted base plates.

When the installation of such a support requires Ceilcote grout, a dam of this grout, along with breather tubes through the dam, are set up around each base plate. A less viscous form of the same grout is pumped behind the dam through zinc fittings inserted through the top of the base plates. Occasionally, a leak will develop in the dam during the pumping operation. If this happens, pumping is stopped while the leak is repaired.

When the grout fills the void behind the dam, it runs into the breather tubes. To ensure that the tubes are full, pumping would continue until grout runs out from the tubes and onto the floor. The tubes are then bent up to prevent further leakage and pumping is stopped.

After the grout has hardened, the exposed ends of the tubes are cut off, and a cosmetic coat of grout is applied over the tube ends.

The grouting with Ceilcote grout of the area under the base plates for 20-85R was performed in accordance with a Foley Work Process Traveler per Work Request C-6441. The various portions of the work, as performed in accordance with the traveler, were inspected and accepted by three different Foley QC inspectors. An inspection of this support by a PGandE Construction Engineer on March 29, 1984, revealed no obvious defects in the grout, and no further action on this item is necessary.

The individual making the allegation also expressed a concern regarding the drilling of a hole through a weld attaching a shim plate to the support. Because this weld does not support any load, holes drilled through it are inconsequential. The shim merely acts as a spacer.

The primary purpose of this weld is to prevent someone from accidentally knocking the shim out. The weld of more than 1-inch still holding the shim to the support is more than adequate for this purpose. Drilling of a hole through the weld for this shim violates neither applicable codes nor site procedures. No further action is necessary on this item.

SSER 22, Allegation #169

It is alleged that:

Pullman failed to conduct support welds as required by procedures.

The allegation that WPS 7/8 was used to join steel shapes for pipe supports without the use of a backing bar is essentially the same as that addressed by PGandE response to Joint Intervenor's Motion to Reopen on CQA, Breisemeister, et al. at 11-12. As stated in the response, even though backgouging and backwelding were not specifically identified in WPS 7/8, use of a backing bar and backgouging serve the same purpose to ensure weld fusion to the weld root. Either method is allowed by AWS or the ASME codes. The welding procedure specification was properly qualified in accordance with ASME Code, Section IX. The person making the allegation further states that the Pullman QA/QC Manager wrongly approved the welding technique utilized. The Pullman QA/QC Manager, Mr. Harold Karner, has no recollection of the specific incident cited in the allegation, though he has discussed this aspect of WPS 7/8 on several occasions with different inspectors. To clarify any confusion over the use of backgouging (including backgrinding), the applicable section of WPS 7/8 was revised on March 12, 1984, to specifically provide that backgrinding and backwelding are acceptable.

No corrective action is necessary.

SSER 22, Allegation #170

It is alleged that:

Pullman may have lost pipe traceability due to inadequate training of fab shop inspectors.

The allegation that pipe traceability has been lost due to inadequately trained inspectors and improperly handled Field Warehouse Requisitions (FWRs) is false. The charge appears to stem from a memo written to the Pullman QA/QC Manager in January 1984, documenting several cases where QC inspectors failed to forward their copy of FWRs for Class I hanger material to QA as required by instructions on the form itself.

Though heat traceability for hanger materials is not required to be maintained by applicable codes or site procedures (ESD-223), heat traceability for all Class I process pipe and process pipe attachment materials is required to be maintained by codes and Pullman Power Products Procedure ESD-201. To simplify the duties of the field QC inspector, all FWRs are forwarded to the QA department for final disposition.

As a result of the January memo, two notices were sent by Pullman QA/QC management to all Pullman inspectors in February 1984, reminding them of the requirements regarding FWRs. Additionally, ESD-201 has been made part of the required general reading for all new inspectors. The alleged apparently is concerned that, had a similar failure to forward the FWRs for Class I pipe occurred, there may have been the loss of heat traceability for pipe. Such a failure did not occur and, even if it had, traceability would not be lost.

At the time of manufacture, each Class I pipe is required to be marked with a heat number. The heat number identifies the mill where it was manufactured and the heat of metal from which the pipe was formed. Pursuant to ESD-201, this number is transferred to each piece cut from the original by stamping or etching the piece prior to cutting. Field verification of this number at the time the piping documentation package is assembled, is, therefore, a proper, albeit time-consuming, method of verifying material traceability.

The heat number on the pipe is required to be recorded on an FWR at the time the pipe material to be installed is withdrawn from the warehouse. One copy of the FWR is kept at the warehouse, one copy is sent to the foreman responsible for the pipe installation, and one copy is sent to QA for incorporation into the piping documentation package. If, for some reason, the QA copy of an FWR is unavailable, a photocopy of the warehouse FWR can be used. If, for some reason, field inspections and a record search fail to verify material traceability, the pipe would be cut out and replaced. In no case is non-traceable material installed as part of a Class I piping system.

The allegation, therefore, has no merit. The problem which initiated the allegation, though of minor significance, has been addressed. No further corrective action is planned.

SSER 22, Allegation #175

It is alleged that:

Changes from Interim "As-Built" Drawings to Final Drawing - Inadequate Control has been exercised over the transition from Interim Drawings to Final Drawings of the station as actually constructed. No specifics were provided.

Because no specifics have been identified, this item is difficult to address. However, it is surmised that the item of concern is that the design was issued and constructed on the basis of the information provided in Design Change Notices (DCN) and design implementation sketches. The design process is fully described in letter DCL-84-068 dated February 17, 1984, in the response to SSER 21. As-built drawings are fully controlled, under the DCN process, to ensure that there is an orderly transition from interim drawings through the final drawings. Based on the available information on the concern, this allegation has been addressed, and no further action is required.

SSER 22, Allegation #188

All of the concerns that there was a QA breakdown at Pullman which is contained in Allegation #188 were presented in the affidavit of Harold C. Hudson dated February 1, 1984 (Hudson Affidavit). PGandE previously responded to that affidavit. Hudson's individual allegations, along with references to PGandE's responses, are listed below.

It is alleged that:

1. Weld procedure Code 7/8 for piping and plates has been used improperly to weld numerous forms of structural steel on pipe supports. What happened is that Pullman substituted American Society of Mechanical Engineers (ASME)

pipe welding procedures for the American Welding Society (AWS) structural steel procedures, as implemented. This practice exceeded the legally-approved limitations for use of the procedure. The limits were logical, since the two types of jobs have little in common. Pipe welding involves working around a circumference. In structural steel welding the axis of the weld is on a straight plane. (citing Hudson Aff. at 4.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-6, 9-10, 15-16.

As indicated in the response, both the ASME Section IX and AWS D1.1 Codes place no restriction on the product forms (e.g., plate, pipe, tube, shape) that a WPS may be used to weld. Therefore, a fillet weld and/or groove may be made on pipe, plate, tube, or flange beams using a WPS which was qualified by test welds on pipe or prequalified under D1.1. No corrective action is required.

It is alleged that:

2. Code 7/8 has been used improperly to weld tube steel on pipe supports. Tube steel involves a different type of metal than the P-1 material covered by ASME procedures. This is significant, because the NRC has identified use of the same metals as a precondition to use ASME procedures for AWS work. In fact, tube steel welding is so unique that the AWS Code has a special section for it. (citing Hudson Aff. at 4-5.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 9-10.

As indicated in the response, ASME Code Case N-71-9 has determined that A500 Grade-B tube steel may be welded with a P1 WPS. Contrary to the allegation, tube steel is not a different type of metal. The affidavit's reference to a special section of the AWS Code dealing with tube steel is both misleading and irrelevant. The AWS Code does not apply to pipe support work at Diablo Canyon, and the "special section" referred to by Mr. Hudson was written primarily for the design of special structures, such as offshore oil platforms. No corrective action is required.

It is alleged that:

3. Code 7/8 was improperly used to weld threaded weld studs which bolt plates to civil steel on Class I safety-related pipe supports. The type of welding used for these studs is not listed within Code 7/8, and it bears almost no resemblance to the work legally covered by Code 7/8. (citing Hudson Aff. at 5.)

4. The welding for threaded studs did not even honor 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.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 11-12 and in PGandE's response to Concern #169, SSER 22.

As indicated in the response, the shielded metal arc welding process used to weld the studs is specified in WPS 7/8. Additionally, both the use of backing

bars and back gouging, which includes backgrinding, serve the same purpose by ensuring full-weld fusion. To help clarify the procedure, WPS 7/8 has been revised to state specifically that backgrinding is acceptable. No further corrective action is required.

It is alleged that:

5. Code 7/8 has been used to weld at least eight pipe support joint configurations, including flare bevel groove welds, and double bevel groove welds, not covered by Code 7/8. Each of these configurations represents a unique welding task and legally must have its own approved weld procedure specification detailing the joint configuration. (citing Hudson Aff. at 5.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-6, 13-14.

As indicated in the response, the allegation is based on the false premise that joint configuration is an essential variable for pipe support welding. It is not. Pipe support welding is performed in accordance with ASME requirements, not AWS requirements, and joint configuration is considered a nonessential variable for ASME welding. No corrective action is required.

It is alleged that:

6. Process sheets that guide quality control coverage did not consistently call for inspection to verify the fitup of flare bevel groove welds; one of the joint configurations not covered by the 7/8 procedure in the first place. That leaves the quality of the ensuing welds doubly unreliable.

This uncontrolled work has been occurring as part of the current design modification construction work. I have read a PG&E (sic) memorandum asserting that QC fitup inspections are not required for flare bevel welds. That memorandum is not sufficient to overrule engineering specification ESD-264, which requires inspections of groove welds and full penetration welds. (citing Hudson Aff. at 5-6.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breisemeister, et al. Aff. at 34-36.

As indicated in the response, fit-up inspection is not technically necessary, provides no quality benefit, and is not required by ESD-264 or ESD-223 for flare bevel welds. ESD-223 must be used in conjunction with ESD-264 to accurately ascertain the fit-up requirements for flare welds. Mr. Hudson has chosen to ignore the detailed information in ESD-223 which permits such operations without a fit-up inspection. The PGandE memo referenced in the affidavit clarified this latter fact. No corrective action is required.

It is alleged that:

7. Code 7/6 has been improperly used on pipe rupture restraints to weld five types of metal different from the ASME approved P-1 material. These restraints prevent a pipe ruptured during an earthquake from whipping back and forth, which could damage the rest of the equipment. (citing Hudson Aff. at 6.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breisemeister, et al. Aff. at 14-15.

As indicated in the response, the five metals (A441, A572 Gr. 42 and Gr. 50, A500 Gr. B and A588) are permitted and prequalified in the AWS D1.1 code. Rupture restraints are separate and distinct from pipe supports, and AWS D1.1, not ASME IX, is the controlling code for rupture restraint welding. Pullman QA/QC program identified the fact that these materials were not listed in the WPS paperwork. The paperwork has since been corrected. Therefore, no further corrective action is required.

It is alleged that:

8. Code 7/8 was improperly used to weld two structural steel shapes on pipe rupture restraints that are not covered by the procedure--W shapes and tube steel. (citing Hudson Aff. at 6.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-6, 15-16.

As indicated in the response, WPS 7/8, in conjunction with ESD-243, is a prequalified AWS D1.1 procedure which may be used on all product forms (such as W shapes and tube steel). No corrective action is required.

It is alleged that:

9. Code 7/8 was improperly used for at least 11 joint configurations not covered by the procedure itself. These joint configurations were not generically prequalified per the AWS Code and were without Procedure Qualification Records and/or were not detailed on the Weld Procedure Specification. (citing Hudson Aff. at 6.)

It should be noted that the cited Hudson Affidavit, with its attachments, specifically indicates that this issue refers to pipe rupture restraint joint configurations rather than the pipe support joint configurations referred to in item 5 above.

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-6, 16-17.

As indicated in the response, this situation was identified by Pullman QA/QC years ago. Nine of the joint configurations were acceptable and prequalified to the AWS D.1.1 code (the applicable code for pipe rupture restraints), one was qualified by testing, and one was removed and repaired using an acceptable procedure. No further corrective action is required.

It is alleged that:

10. The result of the procedural breakdown was uncontrolled welding. To illustrate, in one example, pipe rupture restraint square groove welds were conducted without any established or documented procedure that applied to the work in question. In some instances, welds had been completely removed without any QC record of their disappearance. The records reflected QC accepted welds where none existed. For documented repairs, there was only erratic QC coverage due to unexplained procedural changes that deleted the requirement for nondestructive examinations. (citing Hudson Aff. at 6.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 17 and 38.

As indicated in the response, the square groove welding problem was previously identified by Pullman QA/QC, and the lack of a qualified procedure for square groove welds was properly documented and dealt with on DR4899. (This issue is the same as item 9 immediately above.) The undocumented removal of welds was investigated and determined to be an isolated case. The involved personnel received instruction in the appropriate procedural requirements, and the required documentation was generated. No further corrective action is required.

It is alleged that:

11. Pullman has recognized the error of applying ASME welding procedures to AWS work in an "uncontrolled manner and issued Welding Technique Specification No. AWS 1-1, in an attempt to clarify the proper use of Code 7/8 on AWS work. But the scope of corrective action was inadequate. It only covered the work in a weld crack repair program on pipe rupture restraints. The misuse of Code 7/8 far exceeds the use of AWS 1.1. The crack repair program only covered about one-fourth of the pipe rupture restraints, and none of the pipe supports. (citing Hudson Aff. at 7.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 17 and 19.

As indicated in the response, AWS 1-1 was written as a supplement to WPS 7/8 at the start of the rupture restraint repair program to deal with heavy section field welds. New welds for rupture restraints are also made to the requirements in AWS 1-1 or to the superseding revision of ESD-243, which included the AWS 1-1 requirements. The governing code for the welding of pipe

supports is ASME Section IX, not AWS D1.1, and the use of an ASME welding procedure for pipe supports is quite proper. WP 7/8 plus supplement AWS 1-1 was appropriate for rupture restraints. The allegation is, therefore, erroneous since WPS 7/8 and WPS supplement AWS 1-1 have been appropriately applied. The NRC investigated this point and concluded the above practices were acceptable (SSER 21 at 2-208). No corrective action is required.

It is alleged that:

12. AWS 1-1 failed to fully correct the improper use of Code 7/8 for welding in the weld crack repair program. The procedure uses a steel not contained in the list of acceptable AWS base metals, without evidence that it had been individually qualified to provide its reliability. (citing Hudson Aff. at 7.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 20.

As indicated in the response, the material in question is A515. This is not a AWS D1.1 prequalified material and does not need to be. The AWS code permits the use of a non-prequalified material with the Engineer's acceptance. The weldability of A515 steel is known, and it is listed in ASME Section IX as a P1 material. It was accepted as a weldable material by PGandE, the Engineer for the project. No corrective action is required as a result of this allegation.

It is alleged that:

13. The above violation was approved on December 20, 1979, by V. J. Casey, who signed off as Cognizant Welding Engineer. Sixteen days earlier, however, he had been appointed Pullman's Assistant QA/QC manager, according to an interoffice memorandum. To my knowledge, Mr. Casey has never been listed on the Pullman organizational chart as a Cognizant Welding Engineer. The only way his approval would not represent a false statement is if he were simultaneously a construction and QA official. That would be a violation of the NRC's requirement for a QA program independent of construction. (citing Hudson Aff. at 7.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Karner, et al. Aff. at 12-13.

As indicated in the response, at no time did Mr. Casey work for the Pullman Construction Department. After discussion with the Corporate Welding Engineer, Mr. Casey prepared the paperwork for a minor revision to the procedure in question. He was not an approver, as is alleged. Review and approval of the procedure was performed by Pullman's QA/QC manager, PGandE's resident mechanical engineer, and PGandE's welding engineer. No corrective action is required.

It is alleged that:

14. I also have serious reservations about Mr. Casey's qualifications, based on his judgment in the field.... He instructed me to measure fillet welds by the throat, when the AWS Code requires the measurements from the leg of the weld. For approximately two months, I inspected welds to the wrong standard, because Mr. Casey gave me a makeshift gauge not designed to measure fillet welds. Other inspectors informed me that Mr. Casey has changed the rules on the spot for equipment anchor modifications in the containment. They stated his instructions were to work to a "relaxed" engineering specification ESD-243. (citing Hudson Aff. at 7-8.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 4-5.

As indicated in the response, Mr. Casey's experience is extensive and more than qualifies him for his duties. Contrary to the allegation, there is no known instance where gauges not suitable under AWS requirements have been used to measure welds. In the case of concave fillet weld contour, it is correct to measure the weld throat with a fillet throat gauge. Because of their availability, there is no reason why any weld gauge other than the proper gauge would be used for a job. The allegation that certain inspectors were told to work to a "relaxed" ESD-243 is simply hearsay and is unsubstantiated by the facts. No correction action is required.

It is alleged that:

15. Through loopholes in its Engineering Specification ESD-223, Pullman improperly exempted itself from AWS design, fabrication, and erection requirements for all structural steel pipe support welding. Writing off the rules in this fashion violated the PG&E contract specifications. To my knowledge, there is no documented authorization from PGandE to deviate from the Code requirement, which is still in the contract. (citing Hudson Aff. at 8.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 22.

As indicated in the response, this allegation has absolutely no merit.

Pullman ESD-223 correctly specifies that pipe supports shall be fabricated in accordance with ANSI B31.1 and B31.7 and ASME IX requirements. This is completely consistent with PGandE Contract Specification No. B711. Therefore, there was no loophole and no generic exemption.

The governing portion of Specification B711 for Welding is Section 3, Subsection 4.0. This section clearly spells out that all welding shall be in accordance with ANSI B31.1 and B31.7 and ASME IX. Paragraph 4.1 specifies that all welders shall qualify in accordance with ASME IX. Paragraph 4.12 specifies that all welding procedures shall be qualified in accordance with ASME IX.

Pullman's welding program for piping supports fully meets the requirements of ANSI B31.1 and B31.7 and ASME IX, which are the only requirements in Specification B711 applicable to pipe supports. No corrective action is required.

It is alleged that:

16. PGandE contract specifications on welder qualifications were changed without required review and authorized approval. The rules were changed through a cryptic, unexplained note. The changes involved the qualifications standard for all rupture restraint welders before July 10, 1979. The use of ASME qualification standards for welders doing unrelated AWS work mirrors the breakdown in welding procedures. Again, however, the 1979 corrective action only applied to rupture restraints. (citing Hudson Aff. at 8.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-7.

As indicated in the response, PGandE did modify and clarify contract requirements via letters and memoranda, but these modifications had no bearing on the adequacy of welds for pipe rupture restraints. On several occasions, Pullman Power Products had received direction from PGandE that welder performance qualification for rupture restraints welding may be performed in accordance with AWS D1.1 or ASME IX. The use of ASME IX for qualification of structural welders has been applied on many nuclear projects and has been accepted by the NRC Staff. This change was incorporated in Specification 8833XR with Change Notice Number 17. This is acceptable due to the similarity between the requirements of the two codes for welder qualification and for other reasons stated in the CQA response. This similarity was confirmed by a detailed analysis which resulted from a PGandE initiated NCR, DCO-83-RM-N002. The charge that the "1979 corrective action only applied to rupture restraints" is, therefore, of little consequence. No corrective action is required.

It is alleged that:

17. The PGandE contract requirement for Charpy, or notch impact strength tests, was waived for Code 7/8 and other welding procedures. Charpy tests are necessary to be sure the welds installed under the procedure can meet relevant design and professional code requirements for strength. Deleting this requirement was a serious step, which should have gone through the Contract Specification Change Notice

process to assure proper engineering review and approval. Instead, in January, 1974, a PG&E piping superintendent removed this significant QA check with a one-word penciled response, "No", when Pullman asked in a letter if weld procedures for rupture restraints required Charpy impact tests. (citing Hudson Aff. at 8-9.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breisemeister, et al. Aff. at 20-22.

As indicated in the response, this allegation is factually incorrect. The "relevant design and professional code," AWS D1.1, used for rupture restraints, does not require Charpy impact test. The requirement for Charpy impact tests in Contract Specification 8833XR was deleted by PGandE Specification Change Notice #9. This Change Notice revised the requirement for impact testing of the weld heat affected zone so that it is required only when specified by PGandE on design drawings. This Specification Change Notice was approved by PGandE's Engineering Department on February 12, 1975. Additionally, during a recent NRC inspection, the issue of notch toughness for rupture restraint welds was addressed by Pullman. An engineering evaluation determined that the rupture restraint material most susceptible to toughness degradation was A588. Charpy impact data from prior welding procedure qualification tests were then used to demonstrate adequate toughness of A588 weldments made using Pullman weld procedures. The Charpy impact data for the weld-heat-affected zone and deposited weld metal exceeded the toughness of the unwelded base metal. No corrective action is required.

It is alleged that:

18. In violation of still unrevised contract specifications, specific corrective action commitments on relevant Non-Conformance Reports (NCR), and relevant procedures for the weld crack repair program, none of the full penetration welds less than 9/16 in. thick among rupture restraints were ultrasonically tested. This means that the welds in rupture restraints since July, 1979, were not fully covered by quality control tests in a significant number of cases. PGandE engineers accepted the loopholes to Pullman's program in July, 1979, again without the required review and approval, and without revising the relevant contract specification that was being ignored. (citing Hudson Aff. at 9.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 14-16.

As indicated in the response, the allegation that some welds in rupture restraints made since 1979 have not been fully covered by quality control is false. Since 1979, the quality of all new full penetration welds on rupture restraints has been assured by magnetic particle testing and visual inspection. Additionally, all welds greater than 9/16-inch thick have been subject to ultrasonic examination (UT). The loophole referred to by Mr. Hudson was a failure to revise Specification 8833XR in 1979 to indicate that, although MT was required, UT of welds between 5/16-inch and 9/16-inch was no longer required, although MT was required. For clarification, Specification 8833XR has been revised to require UT for welds only 9/16-inch or greater. No further action is required.

It is alleged that:

19. Another weld procedure, Code 88/89 for carbon steel piping, has been used to weld pipe support structural steel shapes and plates during both original construction and repair work in the current design modifications. Structural steel shapes and plates are not covered by Code 88/89. (citing Hudson Aff. at 9.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 1-6, 23.

As indicated in the response, welding of pipe supports falls under the requirements of the ANSI B31.1 and B31.7 and ASME IX Codes. WPS 88/89 has been properly qualified in accordance with ASME IX.

WPS 88/89 includes a statement that it is qualified for "Carbon Steel (P-1) piping." However, this procedure is also qualified to weld pipe supports, as well as piping, in accordance with ANSI B31.1 and B31.7, and ASME IX requirements. ASME IX does not restrict the qualification of a WPS to a particular product form, such as pipe, plate, or a structural shape. Instead, ASME only requires qualification on the basis of material characteristics. Therefore, although WPS 88/89 does not explicitly state it, WPS 88/89 is qualified for pipe, plate, and structural shapes used in pipe supports. Based on these facts, the allegation has no support. The facts indicate that the alleged did not understand, or would not accept, contract and code requirements. No action is required.

It is alleged that:

20. In violation of the contract specification, Code 88/89 has been used to weld carbon steel plates and structural steel shapes to rupture restraints with two welding processes, Shielded Metal Arc Welding (SMAW) and Gas Tungsten Arc Welding (GTAW). GTAW is not covered by the relevant AWS Code. (citing Hudson Aff. at 9.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breisemeister, et al. Aff. at 4-5, 23-24.

As indicated in the response, while the GTAW process is not a prequalified process in AWS D1.1, AWS D1.1 does allow the qualification of any welding process as part of a welding procedure that is employed in executing AWS Code work. WPS 88/89 was qualified in accordance with the AWS D1.1 provisions for an unlisted process. The Engineer (PGandE), in accordance with the authority granted by AWS D1.1 for accepting an unlisted process, approved the WPS. This acceptance was based on the existing ASME procedure qualification records. As stated previously, the NRC has evaluated this allegation and determined that there was no safety significance. (Diablo Canyon SSER 21, at 2-208.) No corrective action is required.

It is alleged that:

21. In August, 1979, PGandE issued Welding Technique Specification No. AWS 1-3 to clarify the use of Code 88/89 for AWS welding. Unfortunately, the "solution" again repeated the problem. AWS 1-3 covers a welding process, (GTAW) and a base metal (A-515) not covered by the relevant AWS code provision. (citing Hudson Aff. at 9.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 24-25.

As indicated in the response, the allegation is false. The AWS Code D1.1 allows the Engineer (PGandE) to approve welding processes and materials not explicitly approved by that code. PGandE approved both GTAW welding and the use of A515 steel when approving AWS 1-3. Additionally, weld qualifications tests by Pullman, involving the use of A515 material and the GTAW welding process, have demonstrated the adequacy of the material and the process. No corrective action is required.

It is alleged that:

22. Pullman also substituted welding procedure Code 92/93 for pipe rupture restraints when the process sheets specified that the work would be done to Code 7/8. The Pullman Assistant QA manager accepted the switch in an August 15, 1978, memorandum without changing the process sheets--which left a record of work to a different procedure than was actually used. The only records accurately reflecting the weld procedure used were the weld rod requisition forms. (citing Hudson Aff. at 10.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske Aff. at 1-4.

As indicated in the response, the allegation that work was not performed in accordance with the process sheets or that the Pullman Assistant QA manager approved undocumented deviations from process sheet requirements is false. The memo referenced by Mr. Hudson is clarifying instruction intended to help

explain differences between rod requisition form callouts for WPS 92/92 and the callouts for WPS 7/8 on the governing forms, the process sheets. The work was performed to WPS 7/8, and the process sheets were correct. Though of no technical or quality significance, these differences might be confusing to people preparing the rupture restraint documentation packages. The memo clarified and explained those differences to everyone's satisfaction except, apparently, Mr. Hudson. He remains either confused or unwilling to accept the explanation which his peers and superiors found acceptable. No corrective action is required.

It is alleged that:

23. The informal approval of the welding procedure switch was based on a false premise--that both procedures were qualified to unlimited thickness and were technically equivalent. In fact, they only bear a passing resemblance. For example, Code 7/8 does not include a type of welding in Code 92/93 that is only universally approved by the AWS for welds up to 1/4 in. thickness. Nor did Code 92/93 have its own procedure qualification test to verify its reliability on the welds greater than 1/4 in. thick. In effect, that welding was uncontrolled and its quality is legally indeterminate. The two welding procedures are also different with respect to joint configurations, joint details, tacking the joints, weld processes to be used, backing bar requirements, and welding techniques, such as the allowable heat input from AMPS and maximum volts. The controls for clearly distinct special processes cannot be legally intermingled through a memorandum. (citing Hudson Aff. at 10.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Geske Aff. at 1-4.

As indicated in the response, there was no switch of welding procedures. Pullman welders were qualified using an ASME IX groove weld test which qualified them to use either WPS 7/8 or 92/93. The welder used WPS 7/8, although, as a convenience, they drew electrodes based on WPS 92/93 clearances. The process sheet requirements were followed as required. No corrective action is required.

It is alleged that:

24. Contrary to contract specifications, welders qualified to ASME-based Code 92/93 were used for structural steel welding without being properly qualified to the AWS Code. The switch was accepted on August 15, 1978, Interoffice Correspondence, rather than through an accountable procedure with review, authorized approval and a Contract Specification Change Notice. (citing Hudson Aff. at 10.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske Aff. at 1-4; Breismeister, et al. Aff. at 1-7.

As indicated in the response, the memorandum of August 15, 1978 did not authorize a switch because there was no switch. It attempted to record obvious documentation inconsistencies, not to authorize departures from approved procedures. The differences between the two codes on the subject of welder qualifications were formally documented on NCR DCO-83-RM-N002. A

detailed analysis conducted as part of an investigation for the NCR revealed these differences to be insignificant. The review and disposition cycle of an NCR is a documented process that requires review and authorized approval.. The disposition of NCR DCO-83-RM-N002 did not require a Contract Specification Change. No further action is required.

It is alleged that:

25. On April 14, 1983, Discrepancy Report on 1972 welding in the Spray Ring Piping System for the Unit No.1 containment dome, DR #4713, failed to identify an organizational breakdown far more significant than the issue it disclosed (variations between the SMAW weld process used and the process reported in the process sheets). DR #4713 also revealed that the process sheets and rod requisition forms referenced different weld rods than had, in fact, been used. The response of the QA/QC manager was to accept the violation as is. The DR did not mention one of the most significant violations: the production department substituted an unauthorized, unapproved procedure and process for the procedure which had been properly selected and approved by the QA system and the third party authorized inspector from the State of California. This was done in order to avoid delays when QA issued the wrong weld rod for Weld Procedure 128. Production could not wait to correct the weld rod, so the foreman just changed the procedure. In other words, the production department's "solution" was to achieve compatibility by making the procedure as wrong as the weld rod. DR #4713 endorsed the procedure switch (Id., at 23-25). If production can overrule the QA system so easily on such casual grounds, it means that controlled welding procedures occurred only when tolerated by the construction department. Under the circumstances there can be no basis for confidence that the quality of the welding was controlled. Most significant, in April, 1983, Diablo Canyon management was still satisfied with this result. (citing Hudson Aff. at 11.)

26. DR #4713 missed another equally significant violation: QC inspectors had approved all the welds after visual examination, although the GTAW and SMAW welding procedures do not look the same. The 1972 failure raises serious questions about the reliability of QC inspections

at the time. The failure of DR #4713 to even note the QC inspection failure demonstrates that 11 years later, the acceptance standards have not yet become realistic. Significantly, before it was issued, this DR was reviewed three times by Bechtel and PG&E management, which must assume responsibility for a QA report that failed to disclose, at all, the most significant QA violations. (citing Hudson Aff. at 11-12.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 36-38.

As indicated in the response, these allegations relate to the use of one qualified, approved, and acceptable WPS in place of another such WPS. In 1972, Pullman's QC inspection emphasis was on the physical weld quality, including surface finish and contour. Later, emphasis on documentation details and quality control inspections increased as discrepancies in documentation, though minor, became apparent. A review performed by PGandE shows that the overall incident rate of such documentation deviations was low, and, in all cases, acceptable welds were made. Additionally, information on the electrode requisition form always included the correct weld material/lot data. This statement has been substantiated by a study performed on a sample of 300 welds made during the period from 1972 through 1975. The overall documentation deviation rate for welds during this period was found to be about 3.7%, and no welds were physically rejectable. Further, the documentation deviation rate improved as administrative quality requirements were emphasized increasingly. The welds in 1975 showed no documentation deviations from the specified process sheet weld procedure.

The allegation draws a false inference from these minor documentation deficiencies. Mr. Hudson would have one believe that the documentation was 100% correct and that the cause of the deficiencies was the inability of the QC inspectors to detect which weld process was being used. This was not the case; the QC inspectors' deficiencies were in not reconciling the inconsistencies between the actual weld and information on the process sheets to obtain the type of "paper trail" desired today.

In addition, the subject discrepancies were discovered during a Pullman internal system documentation review and were identified in a memo by a Pullman QA representative in the mid-1970s, again showing an active and properly functioning QA program.

While documentation discrepancies existed in the past, they were identified by the quality system and corrected. The items cited did not in any way indicate a breakdown in the quality system nor a breakdown in the quality of the product. No further action is required.

It is alleged that:

27. The breakdown in records for the weld rod and weld process sheets render (sic) it impossible to verify the qualifications of early welders by reconstructing weld rod and process records, as asserted by Pullman in response to 1977 Nuclear Services Corporation findings that the qualifications could not be established for welders in late 1972. I demonstrated this effect of DR #47:3 by applying

its findings to a case study on a welder whose qualifications were challenged in the original NSC audit. (citing Hudson Aff. at 12.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 8-9.

As indicated in the response, Mr. Hudson's assertion that the qualifications of welders employed at Diablo Canyon in 1972 are indeterminate is false.

This question was previously addressed by NRC inspection report No. 50-275/83-37. That report concluded that records of Pullman welder qualifications prior to 1978 are adequate and meet ASME section IX requirements. No corrective action is required.

It is alleged that:

28. My attempts to perform my audit duties on welding led to sustained management hostility, including restrictions on my organizational freedom, harassment and intimidation, and retaliation through personnel actions. On January 28, 1983 the harassment reached a climax. I had already been removed as internal auditor on pretextual grounds and was doing research for pending audit reports that I had issued, in this case Unscheduled Internal Audit #35 on pipe rupture restraints. I was at my desk reviewing the records on three full penetration welds that had been tested to the wrong nondestructive examination process. Mr. Karner approached and wanted to know what I was doing. When I told him, he asked if I had been directed to identify those problems. Because I was completing a pending audit of which Mr. Karner disapproved, I accurately answered, "No." He then shouted at me that I was no longer the internal auditor and could no longer identify discrepancies unless he specifically ordered me to. At the time, I was still a

quality assurance employee, helping to close out DCN's and DR's. Mr. Karner's orders to restrict my inquiries violated the requirement for organizational freedom in 10 CFR 50, Appendix B. (citing Hudson Aff. at 12-13.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 5-8.

As indicated in the response, Mr. Hudson confuses organizational freedom with potential organizational chaos. The alleged acts of intimidation by Pullman management were, in fact, nothing more than continued attempts by management to exercise their responsibility for enforcing the provisions of approved procedures and assigned responsibilities. The confrontation cited by Mr. Hudson was over Mr. Hudson's continued attempts to work outside the scope of his assigned duties. It is apparent that Mr. Hudson is an individual who believes that the rules apply to everyone but himself. While he refused to acknowledge the need for control of his work activities, he freely criticized other work activities for what he called lack of proper control. No corrective action is required.

It is alleged that:

29. During the January 28, 1983, confrontation, Mr. Karner also threatened that if I repeated this type of behavior, he would "get rid of me." From his demeanor, I was unsure whether he was referring to my presence on the job, or my presence--period. Mr. Karner's threats eventually convinced me to resign and to take a pipefitting job. The pervasive atmosphere of intimidation was too

counter-productive for an employee to successfully uphold required QA/QC standards within Pullman's quality assurance program. (citing Hudson Aff. at 13.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 5, and 7-8.

As indicated in the response, for over a year before leaving QA and nine months prior to his unfortunate confrontation with Mr. Karner, Mr. Hudson had attempted to qualify for a substantially better paying job as a pipefitter. For someone making a career of casting doubts on others' motives, Mr. Hudson has certainly left his own motives for leaving QA open to question.

The argument cited by Mr. Hudson is not open to question though. It was the culmination of a series of failures by Mr. Hudson to stay within the scope of his job responsibilities and assignments. Though Mr. Karner does not recall using the exact terminology attributed to him in the allegation, such exaggerations on the part of either party in this type of situation may have occurred. No corrective action is required.

It is alleged that:

30. Although Pullman has gotten rid of me, the company has kept the problem of unqualified welding procedures. When I left in January, 1984, we were still working to the same welding procedures I had audited. Nothing has changed except that after all the notice, it is clear that Pullman and PG&E's violations are deliberate. There can be no excuse of ignorance. Corrective action has been nonexistent or ineffective. There were discussions on site

of attempting to qualify Code 7/8 after the fact, which would have been ineffective anyway since it was the sponsoring procedure for considerable work that it did not describe. As of my departure, however, even that halfway step had not occurred. (citing Hudson Aff. at 13.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breisemeister, et al. Aff. at 25-26.

As indicated in the response, it is patently false to state that PGandE and Pullman were deliberately violating requirements. The fact is that Pullman and PGandE were in compliance with the appropriate requirements. It is also apparent that Mr. Hudson did not understand the requirements and would not personally accept the well-documented, technically valid justification for the use of ASME-qualified WPS and ASME-qualified GTAW and the engineer's approved materials for miscellaneous structural steel.

It is alleged that:

31. In some instances, the unreliability of nondestructive examinations is due to manipulation of the test results in order to mask deficiencies. This allegedly occurred in 1982, with respect to tests involving around 230 Unit 1 full penetration welds -- some in the containment -- where UT examinations revealed large numbers of rejectable conditions. Witnesses described the defects to me as voids, slag, and lack of fusion in the roots of the welds -- which raise questions about weld bonding. I was also informed that Bechtel and PG&E management responded by manipulating the UT procedure in a manner that would lower the number of rejected indications. The welds were then "accept(ed) as is". (citing Hudson Aff. at 15.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 17-19.

As indicated in the response, there was no "manipulation" of the UT results to lower the number of rejectable indications. The procedure that was developed and utilized reflected the then current AWS requirements. All welds rejected under the new procedure were analyzed by Engineering to determine their fitness for use under their intended design purpose, or the welds were repaired or replaced. No further corrective action is required as a result of this allegation.

It is alleged that:

32. There is no evidence that the ultrasonic thickness measurement procedure was qualified through tests to demonstrate the 98 percent level of accuracy required by the AEC. The valve measurements were conducted with an uncontrolled procedure, and therefore cannot be accepted as the basis for conclusions about the quality of the valves. In my audit, I could neither find evidence of a Procedure Qualification Record (PQR), nor a Procedure Qualification Test (PQT). (citing Hudson Aff. at 15-16.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 3-4.

As indicated in the response, the valve measurement program was reviewed and accepted by the NRC, and the level of accuracy was demonstrated each and every time calibration was accomplished and the procedures used. The procedure used (ESD-236) was controlled by date and revision number. The auditor could find no evidence of a PQR or PQT since there was no requirement for these documents, and thus, they were not prepared. No corrective action is required as a result of this allegation.

It is alleged that:

33. There is no evidence of "procedure verification tests," required by ESD-236 for the transducers, that take into account the curves, ridges, and irregularities that exist on every valve and significantly affect the measurements. (citing Hudson Aff. at 16.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 4-5.

As indicated in the response, ESD-236 requires that: "Transducers will be of suitable size and adapted with shoes, wedges or saddles as each valve measurement requires, as determined from procedure verification test". The transducers utilized were of adequate size so as not to require the use of shoes, wedges or saddles to adapt the transducers to surface contour. Therefore, PQTs for the transducers were not required and no corrective action is required as a result of this allegation.

It is alleged that:

34. Management appears to have conducted the measurements without any qualification test, despite prior warning that the procedure was too unreliable to support its findings. An April 17, 1973, "Interoffice Correspondence" had disclosed:

3. The transducers available are adequate for flat smooth surfaces. There are no adapters, shoes or wedges available should they become necessary.
4. At this time, it appears the transducers supplied may not be the correct type for thickness readings. If this is true, we will have to order new transducers.
5. The effect of surface contour and roughness must be tested prior to making any reportable results.

6. There is no available equipment on the U.T. equipment for review.

It is doubtful that any meaningful results can be obtained at this time and it is definite that none can be reported until the above-mentioned problems are solved. (citing Hudson Aff. at 16.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 5-6.

As indicated in the response, the interoffice correspondence was not a "warning" that the procedure was too unreliable to support its findings. It was written by the Pullman QA/QC manager to identify questions that he felt needed to be resolved before testing could begin. Subsequent to the testing, Pullman procedure ESD-236 was developed and utilized to conduct the thickness measurements. The concerns of the QA/QC manager were resolved by the time the procedure was issued. Qualification of the procedure was demonstrated each time the UT machine was calibrated and used. No corrective action is required as a result of this allegation.

It is alleged that:

35. Pullman QA Manager Harold Karner improperly refused to take corrective action in January, 1982, when I disclosed the lack of procedure qualification records or tests for ESD-236 and ESD-244, the UT Thickness Gauge Procedure. The problem remains uncorrected. His excuse was that these procedures were only nondestructive measurements rather than nondestructive tests, and therefore did not represent "special processes" whose quality must be controlled.

That semantic distinction is irrelevant. The reason to require reliable, controlled procedures is to assure the quality of sensitive, safety-related hardware. Indeed, in 10 C.F.R. 50, Appendix B, Criterion X, the terms "examinations, measurements, or tests" are used interchangeably. The safety-related purpose for qualified NDE procedures is magnified for ESD-236. ESD-236 was instituted in response to an AEC directive to the nuclear industry after discovery of valve problems at a series of plants. (citing Hudson Aff. at 17.)

36. Mr. Karner's manipulation of definitions is wrong. UT measurements constitute a special process which must be qualified. They are a special process because they are uniquely created to perform a specific quality-related function. Further, PG&E contract specifications and 10 C.F.R. 50, Appendix B, Criteria IX, "Control of Special Processes," identify nondestructive testing as an example of special processes, not as the boundary of the concept. (citing Hudson Aff. at 17.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 6-7.

As indicated in the response, no procedure qualification records or tests are required for ESD-236 and ESD-244. These procedures were used for UT thickness measurements, not for examination of material for quality. After a review of applicable codes for the project, it was determined that a PQR was not required for thickness measurements by UT. The procedures require that, prior to each use, the machine be calibrated to demonstrate accuracy. This is accomplished using calibration blocks traceable to the National Bureau of Standards. The thickness measurement procedures are not uniquely created procedures but are based on industry accepted standards including ASTM E114 and ASME Section V. No action is required.

It is alleged that:

37. UIA #34 of 254 Valve Wall Thickness Data Reports demonstrated that the Data Reports are incomplete and, therefore, are not traceable, as required. For example, none listed the size, shape, or manufacturer's designation for the transducers that performed the wall thickness. The ESD-236 Documentation Packages do not provide any information on the testing equipment beyond the serial numbers. In some cases, there were not even serial numbers for the UT machines and the micrometers used as a mechanical backup measuring device. (citing Hudson Aff. at 17-18.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 19-20.

As indicated in the response, when performing thickness measurements, transducer size, shape, or type is not required as an entry on the data report by procedure or any referenced code. For example, Section V of ASME requires only that thickness measurements be made at a frequency capable of resolving the thickness range to be measured. While the concern referenced in the allegation might be applicable for ultrasonic flaw detection, it is simply not an issue as applied to thickness measurements. Consequently, no action is required.

It is alleged that:

38. The Data Reports offered unreliable, inconsistent information. For instance, 19 reports listed two different UT machines as having conducted the same valve measurement. Serial numbers for UT thickness equipment and micrometers could not be verified independently. Ten percent of the valves checked physically had serial numbers

different from those listed in the Data Reports. In many Data Reports, original information had been whited-out and altered without signature or explanation. (citing Hudson Aff. at 18.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 20-21.

As indicated in the response, only one UT machine (a Branson unit) was used to collect actual wall thickness data. Therefore, the minor documentation discrepancy due to a report form with preprinted information, is of no substance since only one machine was actually used and its traceability is readily demonstrable.

The second aspect of this allegation relates to questionable serial numbers on valves and is false. The two valves Mr. Hudson identified (two of twenty or "ten percent") have been physically checked by PGandE, and the serial numbers do indeed match the Data Report serial numbers and are traceable.

Mr. Hudson was correct about the use of white-out on the reports. Prior to 1974, white-out was commonly used for correcting clerical or transcription errors on paperwork by Pullman Power Products and did not seem to pose any credibility problems. This practice was stopped in the mid-1970's by Pullman. No further action is required.

It is alleged that:

39. Necessary records to demonstrate calibration of the measuring equipment were not consistently available. To demonstrate the potential effects, on three UT measurements whose accuracy was tested, the pre- and post-calibration checks showed variations of 10 percent, 48 percent, and 2.6 percent. [citing Unscheduled Internal Audit #34, Audit Action Request #5]. The maximum error permitted by the AEC was 2 percent. (citing Hudson Aff. at 18.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. at 21-22.

As indicated in the response, the records of UT equipment calibration are maintained in Pullman's quality assurance documentation vault and are available for review. The second aspect of this allegation stems from Mr. Hudson's lack of understanding of the technical aspects of ultrasonic equipment operation. For example, in the case of the valve wall thickness measurements, the ultrasonic machine was calibrated initially with calibration blocks that were checked against actual micrometer points on the valve body being measured. Any variance was then corrected on the ultrasonic unit. All wall measurements taken after this comparison reflected the correction.

According to Unscheduled Internal Audit No. 34, Mr. Hudson compared the Mechanical reading and the UT reading, identified the difference, and assumed that the test was conducted without accounting for this difference. Thus, by not recognizing the compensation made to the UT machine, Mr. Hudson himself has erred and his audit findings are not correct. No further action is required.

It is alleged that:

40. The AEC acceptance standards were violated when valve measurements from equipment that failed minimum reliability standards [citing Hudson allegation #39 above] were used to accept the valves as sufficiently thick. (citing Hudson Aff. at 18.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 22-23.

As indicated in the response, the ultrasonic equipment did not fail. It was properly calibrated using calibration blocks, and the calibration points were recorded on the data sheets to verify accuracy within the two percent requirement. No further action is required.

It is alleged that:

41. Forty-two Data Reports disclosed that the valves were below the minimum thickness, but on the paperwork they were marked as "accepted" without explanation. (citing Hudson Aff. at 18.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 23-24.

As indicated in the response, PGandE has reviewed all associated data sheets and confirmed that all valves identified as under minimum wall thickness were either replaced, repaired, or accepted through engineering evaluation.

Mr. Hudson's concern apparently arose from his inability to locate documentation that attested to such followup action. PGandE has determined that the documentation, which substantiates that appropriate followup actions were taken for those valves identified as under minimum wall thickness, does exist. No further action is required.

It is alleged that:

42. In 11 cases, the measurements were incomplete. The records simply skip results for required areas of the valve, such as the flat pad at the bottom. (citing Hudson Aff. at 18.)

43. In 14 valve locations, there was no documented evidence that the valves had been examined at all. (citing Hudson Aff. at 19.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 24-26.

As indicated in the response, these allegations stem from Mr. Hudson's apparent inability to locate all of the documentation related to the valve wall thickness measurements. The 11 cases for which measurements were incomplete involve new valves that Westinghouse had shipped to replace originals that had been returned for unacceptable wall thickness. Westinghouse performed full UT thickness measurements on the new valves prior to shipment to the site. As Westinghouse had indicated in their shipment documentation that certain areas of the valves were close to minimum, PGandE elected to perform additional measurements on the specific areas in question. Pullman performed these tests and found the valve wall thickness to be acceptable.

The statement that there was no documented evidence that 14 valves had been examined at all is factually correct. However, Mr. Hudson fails to point out that the 14 valves identified were excluded from valve wall thickness requirements either as a result of the valve body not being the pressure-containing item, or they were deleted at a later date by an amendment to the original list by Westinghouse because evaluation showed that these valves were not part of the primary pressure boundary. No further action is required.

It is alleged that:

44. There was no documentation to indicate that weld repairs on the valves were controlled, as required by the AEC. To illustrate the absence of verifiable controls, the Data Reports do not have a requirement to list whether valves were weld-repaired, or the weld procedure used. (citing Hudson Aff. at 19.)

This allegation has been addressed totally in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 26.

As indicated in the response, no requirements exist in ESD-236 for UT thickness data reports to include documentation on valve weld repairs. Valves that were found to have unacceptable wall dimensions were returned to the vendor for repair or replacement. As the repairs were not performed on site, there was no requirement or reason to submit valve weld repair documentation or procedures to site contractors. No further action is required.

It is alleged that:

45. During my research for UIA #34, I discovered that none of the valves meet AEC and PG&E design requirements. Westinghouse, the manufacturer, had explicitly declared that they "were not designed to meet the minimum wall thickness requirements of ANSI B16.5"--one of the relevant professional codes listed by the AEC in 1972. By comparing Westinghouse's communication with PG&E contract specifications, I learned that the valves also do not meet the design requirements in the contract. (citing Hudson Aff. at 19.)

This allegation has been addressed in PG&E response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 27-28.

As discussed in the response, this allegation is in error and stems from Mr. Hudson's erroneous attempt to audit valves supplied by Westinghouse to Pullman's contract requirements. Mr. Hudson compared the valves with Pullman's contract Specification B711. He should have compared them to Westinghouse's contract Specification B700. As a component of the Nuclear Steam Supply System supplied by Westinghouse in accordance with Specification B700, the subject valves were properly designed and fabricated to the requirements of USAS B16.5, using the stress criteria of ASME BPVC, Section III as the basis for establishing stress levels. ASME Section III, Article 9 was properly used for operational design requirements.

The requirements of USAS B31.1.0 were met. The requirements defined in subsection 50.55(a) of 10 CFR 50 specify the use of ASA B31.1 or USAS B31.1.0. USAS B31.1.0, Chapter IV, "Dimensional Requirements," paragraph 126, directs the use of USAS B16.5 for design and fabrication of valves and is

the basis for it being used as the criteria for the pressurizer safety valves. As defined by Westinghouse in letter PGE-2080, the bodies of the valves in question are not part of the reactor coolant pressure boundary and, therefore, were not designed to meet the minimum wall thickness requirements of USAS B16.5.

In summary, the valves in question have been designed to meet the appropriate minimum wall thickness requirements, and no action is required.

It is alleged that:

46. To my knowledge, there still has not been any corrective action on this problem. If there had been good faith attempts, I should have been contacted as the originator of the audit. I remain available to help follow through. (citing Hudson Aff. at 19.)

This allegation was fully responded to in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 28-29.

As indicated in the response, UIA No. 34 has been closed out, and corrective action taken as a result of the audit has demonstrated that the UT examination of valve wall thickness was performed in an acceptable manner.

In accordance with established procedures, receipt of UIA No. 34 was acknowledged in writing by Mr. Paul Dawson, NDE supervisor, on February 15, 1983. This acknowledgment signifies Mr. Dawson's responsibility for preparation of the appropriate corrective action. As Mr. Hudson was not certified as an NDE

technician and, therefore, could not be expected to provide detailed technical input, Mr. Dawson investigated the matter and verified that NDE procedures were properly utilized without requesting additional assistance from Mr. Hudson.

Mr. Hudson left his job with Pullman QA/QC on May 19, 1983. The development of an acceptable corrective action for UIA No. 34 required an extended period of time. The audit was, however, closed out on August 9, 1983. Since Mr. Hudson was no longer part of Pullman QA/QC, he was not made aware of the proposed corrective action, nor was he made aware of the audit closure. No further action is required.

It is alleged that:

47. Similar to UT thickness measurement procedures, nondestructive test procedures lacked documentation of Procedure Qualification Records or tests. In IA #101, I found this flaw in seven procedures out of 21 examined. Beyond the UT thickness procedures, there were five cases where no evidence existed that NDE procedures had been qualified. As a result, the quality of work examined under those procedures remains indeterminate. These included: 1) ESD-234, for UT Inspection of Groove Welds on pipe rupture restraints prior to 1979; ESD-241, for UT examination of Safety Yoke Rods on Safety Valves; ESD-246, for Magnetic Particle testing, with unknown use; ESD-247, for Magnetic Particle examination of welds in the crack repair program on Unit #1 Steam Generator Feedwater Nozzles; and ESD-270, for Liquid Penetrant examinations, with unknown use. On January 12, 1984, I completed and delivered to NRC inspectors, a draft report to Commissioner Gilinsky on IA 101. (citing Hudson Aff. at 19-20.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 7-10.

As discussed in the response, the NDE procedures identified as lacking documentation or not qualified have been reviewed and determined as either not requiring Procedure Qualification Records (PQRs) or having the appropriate documentation. Procedures identified were either qualified or did not require qualification, and no work examined with these procedures remains indeterminate. No corrective action is required.

It is alleged that:

48. The corrective action for procedure ESD-234, consisted of unreliable, "after-the-fact" Procedure Qualification Tests, whose use was not controlled and accomplished using qualified procedures. Ironically, this is the same flaw the late PQT were supposed to correct. Further, there is no evidence that management reviewed and approved the procedures for the PQT. (citing Hudson Aff. at 20.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 10-13.

As indicated in the response, neither the AWS code nor PGandE specification 8833XR required a PQR for ESD-234. Despite this, the procedure qualification was conducted at Harold Karner's request in response to Mr. Hudson's concern. Further, the signatures on the bottom of the procedure are clear evidence that management reviewed and approved the procedure. No corrective action is required.

It is alleged that:

49. QA Manager Harold Karner improperly prevented any corrective action for the lack of procedure qualification records on ESD-270. Instead, he directed that the Procedure Qualification Records for a similar procedure, ESD-210, should be used for ESD-270. That is unacceptable. If the two procedures have separate numbers, there are at least some dissimilarities. Those unique features of ESD-270 inherently will not have a proven demonstration of their ability to identify defects. This QA violation remains ignored. (citing Hudson Aff. at 20.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 13.

As indicated in the response, the AWS code does not require a PQR for ESD-270. The ASME code, however, does require a liquid penetrant PQR when application temperature is outside code limits. Such a PQR did exist for ESD-210. Mr. Karner's decision to apply this PQR to ESD-270 was totally correct as he recognized that the two procedures use the same step-by-step techniques and the same penetrant materials. Thus, the qualification of one procedure logically and properly qualifies the other. No corrective action is required.

It is alleged that:

50. No investigation was performed to determine where ESD-270 was used. Instead, the QA manager told me to just write up what I had learned already as an audit finding. (citing Hudson Aff. at 20.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 14.

As discussed in the response, an investigation to determine where ESD-270 was used was not necessary because the procedure did not require a PQR and the audit finding was in error. Nevertheless, the liquid penetrant inspection daily log sheets were reviewed and it was determined that ESD-270 had not been used from the date of its approval until the date of the review. No further corrective action is required.

It is alleged that:

51. ESD-241 for UT of the safety valve yoke rods involves the most significant violations. In addition to the lack of a PQR, the hardware was tested from December 17-20, 1973, before the UT procedure itself was even issued on December 26, 1973, and prior to approval of the UT procedure by PG&E on February 12, 1974. The testing was totally uncontrolled for the yoke rods on these valves, which I believe control the release of radiation from the containment. (citing Hudson Aff. at 20-21.)

52. ESD-241 was deficient because it violated instructions from Dresser, the vendor for bolts and studs. The Dresser instructions required the rods to be examined prior to threading. At Diablo Canyon, the UT's were conducted after the threading. Further, ESD-241 did not use the Dresser instructions to determine the reference point for sensitivity and criteria to report questionable items. (citing Hudson Aff. at 20-21.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 29-31.

As discussed in the response, Pullman procedure ESD-241 formalized the procedure which was developed and used to perform the UT examination of the Unit 1 safety valve yoke rods. The testing was fully controlled and utilized

the applicable portions of Dresser Instruction SP-52-166, supplemented to recognize that the instruction applied to yoke rods during manufacturing while the Unit 1 rods were already manufactured and installed. Such testing was not required by the ASME code but was conducted in response to anomalies observed in the Unit 2 safety valve yoke rods. Consequently, no corrective action is required.

It is alleged that:

53. The existing documentation for the tests fails to meet the standards both of ESD-241 and the Dresser Instructions. Required information on the testing surface and instrument calibration was not included. (citing Hudson Aff. at 21.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 32-34.

As discussed in the response, there is adequate information on the data sheets to satisfy the requirements of the procedure. The testing surface is clearly identifiable from the type of transducers utilized. Additionally, information on instrument calibration is provided which demonstrates the accuracy of the equipment and the frequency of the calibration intervals. No corrective action is required.

It is alleged that:

54. Both ESD-241 and the UT inspection records failed to reflect compliance with a PG&E-imposed requirement for backup inspection "with the liquid dye penetrant technique to check the yoke rod ends for indications of cracking that might extend into the threaded area of the yoke ends. (citing Hudson Aff. at 21.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 34-35.

As indicated in the response, the requirement for liquid penetrant inspection of the yoke rod ends was reviewed and deleted through an Engineering Release received from the responsible engineer who had suggested the test. Consequently, there is no violation for failure to conduct the test, and no corrective action is required.

It is alleged that:

55. No DR was issued to PG&E on ESD-241, although this corrective action had been agreed to both by Mr. Karner and the NDE supervisor. Mr. Karner improperly reneged on the basis of a memorandum from John Guyler. Mr. Guyler dismissed the detailed, documented DR which I had proposed with the following: PPP has accomplished this per instruction from PG&E. It is evident that a nonconformance does not exist and a DR is not necessary. Mr. Guyler's response was inadequate. First, the procedure violated PG&E instructions. Second, even PG&E does not have the authority to validly instruct Pullman to violate 10 CFR 50, Appendix B, Criterion IX--"Special Processes." Third, Mr. Guyler did not document his asserted conclusion. (citing Hudson Aff. at 21-22.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 35-36.

As indicated in the response, in the course of reviewing the draft DR prepared by Mr. Hudson, it was determined that the work in question was performed in accordance with an appropriate procedure. Consequently, Mr. Guyler was correct in dismissing the DR with the assertion that a nonconformance did not exist. Contrary to the implication of the allegation, there was no violation of 10 CFR 50, Appendix B, Criterion IX. Mr. Hudson would appear to concur with this conclusion in that he reviewed the responses, signed off and closed Audit Action Request No. 1 of IA No. 101. No further corrective action is required.

It is alleged that:

56. Overall, Pullman violated NRC reporting requirements and PG&E contract specifications by only reporting the deficiencies for two out of the seven nondestructive procedures to PG&E on Discrepancy Reports. (citing Hudson Aff. at 22.)

57. PG&E dispositioned the DR for ESD-246 "accept as is", although there is no information indicating where the nondestructive test was conducted. Since the identity of the affected hardware could also impact on the evaluation criteria, PG&E's acceptance was premature. (citing Hudson Aff. at 22.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. at 10.

As indicated in the response, there were no code or PGandE specification requirements to have PQRs for these procedures. Nevertheless, for procedures ESD-246 and ESD-247, a DR (4662) was initiated to resolve Mr. Hudson's audit findings and was dispositioned by PGandE to "accept as is". As no PQR was required, there were no NRC reporting requirements, and no violation occurred. No corrective action is required.

It is alleged that:

58. The reason the location of work tested under ESD-246 could not be identified is that Mr. Karner improperly prevented me from looking. After I learned that ESD-247 was used for welds in the crack repair program on feedwater nozzles in the Unit I Steam Generator, he ordered me not to check where ESD-246 had been used. (citing Hudson Aff. at 22.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 8-10; Arnold, et al. Aff. at 8-11.

As discussed in the response, there was no code requirement for PQRs for ESD-246 and ESD-247. Nevertheless, Pullman did qualify procedure ESD-247 after initiation of a DR by Mr. Hudson. Since qualification of ESD-247 would qualify the procedures in ESD-246, Mr. Karner merely indicated that identification of further cases where these procedures had been used was not necessary. No corrective action is required.

It is alleged that:

59. PG&E improperly dispositioned the DR on ESD-247 "accept as is", although the Magnetic Tests in the procedure were referenced to ANSI standards, rather than the relevant ASME Code Section I; and although the qualifications of the MT personnel conducting the test cannot be verified from the records available. (citing Hudson Aff. at 22.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 8, 11.

As discussed in the response, only two welds were inspected using procedure ESD-247 and these two welds, FW #197 and FW #244, were identified on DR 4662 as being inspected without a PQR. PGandE dispositioned the DR to "accept as is". The MT inspection of the referenced welds using ESD-247 was only an aid in verifying defect removal, and no code required this examination. Hence, a code violation did not exist by the use of procedure ESD-247. The disposition of the DR was correct and no further action is required.

It is alleged that:

60. The corrective action for ESD-246 and 247 involved procedure qualifications after-the-fact. After-the-fact procedure qualifications should not excuse PG&E from accountability under NRC rules. At best, it means that the damage has been minimized. But it also inherently means that 10 C.F.R. 50, Appendix B, was violated, because special processes were conducted under uncontrolled conditions. (citing Hudson Aff. at 22-23.)

61. Even if it is acceptable to conduct procedure qualification tests after the fact, the tardy test must be performed under controlled circumstances. In this case, PQT's were conducted with different equipment than had been used originally. No documentation was supplied to support the asserted Corrective Action Response that the new equipment made the results more conservative. (citing Hudson Aff. at 23.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 10-11.

As indicated in the response, though not required, the PQRs developed after the fact still verify the techniques delineated in the procedure. The PQRs were developed to resolve Mr. Hudson's audit, not as a result of a code requirement.

The capability of the equipment used for these procedure qualifications was equivalent to that used for the original weld examinations. Contrary to the allegation, no assertion was made that the new equipment made the results more conservative. Because the amperage specified by the procedure was employed, the fact that a different piece of equipment was used in the qualification is not relevant. The result of the qualifying test was the same and not more or less conservative. No further corrective action is required.

It is alleged that:

62. QA Manager Karner was responsible for the deliberate failure to provide reasonably prompt corrective action for IA 101. On January 18, 1982, I initially disclosed IA 101; on March 23, 1982, it was finalized after I provided Mr. Karner with additional information which he had requested. On April 6, 1982, corrective action for the first finding in the audit on lack of procedure qualification tests was approved. Before implementation, however, he changed his mind. Although the official time limit for corrective action is ten days, the audit was not closed out for over another year, despite my repeated memoranda and attempts to formally notify Mr. Karner of his obligation to address the issue of unqualified NDE procedures. (citing Hudson Aff. at 23.)

63. Pullman corporate QA Director A. Eck was notified of the failure to take corrective action and improperly refused to help. Instead, he reprimanded me for bringing the matter to his attention. On June 14, 1982, I notified Mr. Eck, through an Interoffice Correspondence, of the overdue corrective action. He did not respond. On July 6, 1982, I performed and submitted Unscheduled Internal Audit #31 to Mr. Eck on the lack of corrective action required by ESD-263 within 10 days. This time I received a response. Both Mr. Eck and Mr. Karner reprimanded me for submitting the audit to Mr. Eck directly, rather than letting it proceed through the chain of command. This violated ESD-263, they explained. My audit was voided. Both individuals neglected to mention the violation of ESD—that I had raised — the QA violations were not getting fixed. (citing Hudson Aff. at 23-24.)

These allegations have been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Geske, et al. Aff. at 6-8.

As indicated in the response, the audit procedures require a corrective action response within ten days, not, as claimed, closure of the audit in that time period. For each of the three Audit Action Requests included in IA No. 101, the corrective action response was made within the required time period.

The lengthy resolution period for IA No. 101 occurred primarily because of the nature of the audit. The audit dealt with nearly 10-year-old activities and was unusually time consuming. Additionally, the audit action request dealt with NDE procedures which were not currently in use, which indicates that it was not necessary to assign a high priority for rapid closure. Thus, the audit was satisfactorily resolved on an "as-needed" basis, with no impact on the quality of ongoing work.

Beyond that, the specific facts alleged by Mr. Hudson are incorrect. Mr. Eck did respond to Mr. Hudson's memorandum and Mr. Hudson was not reprimanded for submitting Unscheduled Internal Audit No. 31 directly to Mr. Eck, rather than let it proceed through the appropriate review chain. UIA No. 31 was voided, but not by Mr. Hudson's superiors, as is implied. It was voided by Mr. Hudson himself, on his own initiative, without any direction to do so from Pullman QA/QC management. In any event, the ultimate closure of IA No. 101, with acceptable corrective action, satisfied the findings of UIA No. 31. No further corrective action is required.

It is alleged that:

64. In January 1983, I was further punished for Mr. Karner's improprieties. I was removed as internal auditor because only 5 instead of 18 audits had been closed out. Part of the problem was due to circumstances beyond my control. Mr. Karner or supervisors were sitting on some of my audits beyond the required deadline. Mr. Karner also was loading me down with ancillary assignments and unscheduled audits were not counted. (citing Hudson Aff. at 24.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Karner, et al. Aff. at 5.

As indicated in the response, Mr. Hudson was replaced as the Pullman Internal Auditor in January 1983. He was not removed from his position of Internal Auditor on the pretext that he had not closed out enough audits.

While Mr. Hudson had also been criticized for not conducting all of the scheduled audits, it was not his responsibility to do the corrective action necessary to close out the audits. Thus, the statement by Mr. Hudson that he was removed as the Internal Auditor on pretextual grounds that he had not "closed out" enough audits is simply not true. No corrective action is required.

It is alleged that:

65. On January 28, 1983, during the meeting in which Mr. Karner threatened to get rid of me for looking at quality-related issues without being assigned, I informed Mr. Karner that he had violated 10 C.F.R 50, Appendix B. He responded twice that we are not committed to 10 C.F.R 50, Appendix B, and that is was "O.K." for him to violate

the Code of Federal Regulations and related contract specifications. (citing Hudson Aff. at 24.)

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 8-9.

As discussed in the response, the characterization of Mr. Karner's response to Mr. Hudson is inaccurate and deliberately misleading. At no time did Mr. Karner say it was acceptable to violate NRC requirements or contract specifications.

Mr. Karner is fully aware of Pullman's obligation to meet quality assurance program requirements and knows he is responsible for their implementation. The fact that Pullman's program meets the quality program requirements is evidenced by successful completion of PGandE, ASME, and NRC program audits. Additionally, onsite audits are conducted by Pullman corporate audit teams to ensure continued implementation of 10 CFR 50, Appendix B. No corrective action is required.

It is alleged that:

66. The procedures for hydrostatic tests conducted before January 27, 1975, are fundamentally inadequate, due to their failure to include documentation requirements, and due to lost pages, the inability to even entirely reconstruct the procedure requirement. (citing Hudson Aff. at 25.)

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 10-11.

As discussed in the response, the allegation is false. The information in the Pullman QA files relating to hydrostatic testing permits the determination of pre-1975 procedural requirements. No corrective action is required.

It is alleged that:

67. Almost all hydrostatic tests and retests from 1975 onward lack required QA documentation. The most significant omission involves QC coverage documented on a piping system closeout - F98 Department Release. This activity is necessary to assure that departments performing the test comply with procedure checklists. Unfortunately, departments only complied sporadically with the requirement to complete and maintain the form which demonstrates compliance with the test procedure. In other cases, there is not necessary backup documentation to verify the conclusions in the release. (citing Hudson Aff. at 25.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 10-12.

As discussed in the response, this allegation was the result of an audit performed by Mr. Hudson. Part of the corrective action for that audit included the initiation of Discrepancy Reports 5148 and 5149. The disposition of these reports was to accept the existing documentation as adequate. Though some checklists (Form F98) were missing at the time of Mr. Hudson's audit, the documented walkdowns by Pullman Engineering and PGandE, as well as Pullman QA participation in the hydrotests, verified that these tests were indeed reviewed by appropriate experienced personnel. The missing checklists are only guides to ensure the equipment that was to be tested was ready for the test. No further corrective action is required.

It is alleged that:

68. From December 1977 - April 1978, in 28 cases Pullman test requirement forms did not have information necessary under the procedure ESD-229. Fundamental data, such as the type of fluid, pressure and temperature, simply is missing. (citing Hudson Aff. at 25.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 12.

As indicated in the response, the allegation is incorrect. All such information was recorded and maintained for the tests in question.

Each of the documentation packages for the 28 hydrostatic tests referenced in the allegation contained data recorded on a form entitled "Hydrostatic Test Procedure Data Report." The information on these forms included, among other things, the "type of fluid, pressure, and temperature for the hydrostatic tests." Therefore, no corrective action is required.

It is alleged that:

69. In 28 cases, Pullman's HT procedure data form does not match PG&E requirements. This form is the guide used to conduct the test, so the distinctions translated into different test conditions that disqualify the results from Pullman's hydrostatic test. To illustrate, in one test Pullman's procedure only had a pressure of 2485 PSIG, when PG&E's acceptable minimum was 2812 PSIG. (citing Hudson Aff. at 26.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 13.

As discussed in the response, an internal audit determined that the test had been conducted at the correct code test pressure, but that the examination pressure had been too low. The test was then successfully rerun under the correct conditions. The audit findings and corrective action were documented in accordance with QA procedures. No further corrective action is required.

It is alleged that:

70. The absence of backup documentation continued after 1978. From March 1978 to April 1980, there were 14 hydrostatic retests without a signed QC field pipe release, despite (sic) the conclusion by Quality Engineering in the test records that QC had verified the results. (citing Hudson Aff. at 26.)

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 11.

As indicated in the response, this discrepancy has been documented on Pullman Discrepancy Report (DR) 5149. Based on other supporting documentation verifying that all required checks and inspections had been performed as required, the DR was dispositioned to "accept as is" the lack of a QC field inspector's signature on form F-98B. No further corrective action is required.

It is alleged that:

71. The problems with hydrostatic tests offer another example of management harassment of QA personnel. During the May 1982 NRC inspection, I spoke extensively with NRC representatives. After the interview Mr. Karner expressed anger at the length of the meeting. At a later meeting, during this general time frame, he threaten (sic) to get rid of me. (citing Hudson Aff. at 26.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 2-4.

Mr. Karner has no recollection of expressing any anger over Mr. Hudson's meeting with the NRC. Indeed, in this same time period, many Pullman people, including Mr. Karner, met with the NRC. As for the alleged threat to "get rid of" Mr. Hudson, a documented conversation was held with Mr. Hudson in July 1982, at which time he was told by Mr. Karner that Mr. Karner was dissatisfied with his performance due to his repeated failure to follow approved procedures. After Mr. Hudson conceded at this meeting that Mr. Karner could no longer put much faith or trust in his judgment and that someone was needed in his position that Mr. Karner could trust and have confidence in, Mr. Karner told Mr. Hudson he intended to replace him as Internal Auditor. This hardly qualifies as an act of harassment or intimidation. No corrective action is required.

72. The reliability of Pullman's Approved Vendors List is indeterminate, due to the inclusion of Microsurface Engineering. This firm only had a token quality assurance program, yet had been approved and passed previous vendor audits. My audit demonstrated that Microsurface did not conduct audits, did not have a written procedure for calibration, conducted uncontrolled inspections, lacked traceability for use on Pullman tools, failed to disclose laboratory standards for calibration, and did not have required documentation for training of laboratory personnel. The violations were so ingrained and pervasive that it is not credible to conclude they only sprang up since the vendor passed an audit the previous year. (citing Hudson Aff. at 27.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 14-16.

As indicated in the response, Pullman's Approved Vendor List (AVL) program meets all the requirements of ASME Section III, as well as 10 CFR 50, Appendix B.

At the time of the initial evaluation of Micro Surface Engineering (Micro Surface) in October 1980, it was determined that in the judgment of the auditor hired by Pullman, Micro Surface had a quality assurance program to the extent necessary to ensure the quality of their services. At the first annual requalification audit on October 7, 1981, the Pullman Internal Auditor (Mr. Hudson) found the Micro Surface QA program to be deficient in several respects. As a result, Micro Surface was removed from the Pullman AVL by the Senior QA Auditor in accordance with established procedures. The point raised by Mr. Hudson is, therefore, a nonissue. No action is required.

73. Corrective action for the Microsurface QA violation improperly was restricted to the prospective step of removing the firm from the AVL. This was inadequate, because the accuracy of measurements made with Microsurface tools is indeterminate. The effects of previous violations will remain undisturbed. (citing Hudson Aff. at 27.)

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 14-16.

As indicated in the response, the allegation that corrective action for Micro Surface QA violations was limited to removal of the firm from the AVL is false. Records of the instruments calibrated by Micro Surface during the preceding year were checked to determine whether Micro Surface's work was

accurate and whether traceability to the National Bureau of Standards was provided. Subsequent calibrations of the instruments by other qualified organizations reported accuracy of the instruments within accepted standards.

Thus, the matter was handled properly and expeditiously, entirely in accordance with established procedures, and the use of instruments calibrated by Micro Surface had no adverse impact on measurements conducted at Diablo Canyon. No further corrective action is planned.

74. In July 1979 Pullman inspectors began finding significant quantities of cracks in welds received from two vendors, Boston Bergen and American Bridge. Until 1980 Pullman inspectors wrote 19 Discrepancy Reports on the welds, which displayed a consistent pattern of linear indication. On April 3, 1980, however, Mr. Marvin Leppke of PG&E issued a memorandum directing Pullman to stop issuing Discrepancy Reports on these "shop" welds. (citing Hudson Aff. at 28.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 39-43.

As discussed in the response, Mr. Hudson fails to point out that in July 1979, a major program to identify and repair cracked welds was underway, and shop welds by Boston Bergen and American Bridge were included in that program. The allegation goes on to state falsely that Mr. Leppke issued a memorandum to Pullman instructing them to stop issuing discrepancy reports on shop welds. In fact, Mr. Leppke's directions were that there was no need to gather more test data on shop welds because enough information was available to make a weld quality evaluation. No corrective action is required.

It is alleged that:

75. In 1982 PG&E repeated the improper restrictions on QA enforcement against the same shop welds. This time PG&E instructed Pullman to delete shop welds from the formal walkdown program that represents a final visual check on quality. (citing Hudson Aff. at 28.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 39-43.

As discussed in the response, this allegation is a total fabrication and distortion of the facts as can be seen by examination of the 1982 letter. PGandE did not delete shop welds from the final walkdown package, but, in fact, directed that identified problems be documented and included with the final walkdown package. No corrective action is required.

It is alleged that:

76. As a prospective welding inspector I failed one of my initial test (sic) and was then given a copy of the test to study to assure passing on the second attempt. Another inspector was certified after taking a test which upon review months later he was found to have failed. He was retested at that time and passed with the assistance of coaching. The test was backdated to the original test date to cover work performed during the interim period. The latter example occurred in 1980. (citing Hudson Aff. at 28.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 2-4.

As discussed in the response, it has been common practice to allow a person to review his corrected test (whether he passed or failed) in order to help him understand and recognize his strong and weak areas. Retests, where required,

were usually with a different test. The second portion of Mr. Hudson's allegation concerns the supposed backdating of an examination for an unnamed inspector. A search of Pullman's personnel file has revealed no evidence of the alleged backdating. Such an occurrence seems improbable in any event because backdating of a test would require the signature of the examiner, the person certifying the examinee, as well as the examinee himself. Based on the information presented by Mr. Hudson, no corrective action is required.

It is alleged that:

77. The most significant cause for the QA breakdown is the environment of repression and the predictable retaliation against QA personnel who diligently try to identify and correct QA violations. The problem goes well beyond the loss of organizational freedom. Upholding the Atomic Energy Act at Diablo Canyon can represent professional suicide. Most significant, the sacrifice is for nothing. The violations remain, uncorrected. My own experience is a case study. Mr. Karner threatened to "get rid of" me on three occasions when I persisted in attempts to obtain corrective action. Mr. Karner restricted my freedom as an inspector until I could only look at specific problems assigned by him. I was reprimanded, verbally and in writing, for communicating with corporate QA management about such a fundamental violation as the failure to take corrective action against unqualified NDE procedures on safety related work. To add insult to injury, in January 1983 I was demoted for not finishing enough assignments. The demotion was due in part to Mr. Karner's refusal to act on my audits, which made it impossible in some cases for me to finish my assignments. (citing Hudson Aff. at 29.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 2-8.

As discussed in the response, the facts relating to Mr. Hudson's experiences are clearly stated in the response. There was no threat to "get rid of" Mr. Hudson for his persistence to obtain corrective actions. Rather,

Mr. Hudson was counseled by supervision on his continuing deviation from established procedures for the conduct of his work and from the scope of his assigned responsibilities. The alleged acts of intimidation by Pullman management were, in fact, nothing more than continued attempts to exercise management responsibility to enforce the provisions of approved procedures and assigned responsibilities. Mr. Hudson's reassignment was as a result of his continued failure to comply with the approved procedures and not, as he alleges, "for not finishing enough assignments."

It is alleged that:

78. The final act of reprisal against me occurred on January 13, 1984. I was laid off from my job as a pipefitter, the day after making my third disclosure to the Nuclear Regulatory Commission. NRC inspectors already had told me that site management had a copy of my first report on welding procedures, and that Bechtel was studying it. On Friday, 50 pipefitters were laid off, supposedly due to a lack of parking space. The usual practice for these layoffs is to let workers from the local union stay until last. In this instance 46 out of the 50 employees laid off were "travel cards" from out-of-town unions. Although more travelers were available, four employees from the local were swept out with the travelers. One of the four was having conflicts with his supervisor and one had an absenteeism problem. The other two were my partner and myself. My foreman protested to the supervisor not to lay off my partner and me, and asked for permission to pick someone else. The supervisor referred him to the resident construction manager, who refused the request and told the job steward that we had to be the ones laid off. My foreman and the job steward recounted these events to me on the day of the layoff. That day the job steward also informed me of the perception of site (sic) that my layoff was due to "politics" and was decided "higher up". On January 25, 1984, the day after retaliation was widely discussed at Congressional hearings, management called me back to work but not my partner. The pattern represented by my case illustrates why a significant number (sic) QA violations have gone unreported, and why the quality of Diablo Canyon is indeterminate. Those who persist in

reporting the violations are dismissed, or harassed relentlessly until they resign, or give up and stop trying. (citing Hudson Aff. at 29-30.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Karner, et al. Aff. at 10-12.

As discussed in the response, Mr. Hudson was laid off during a labor force reduction as a result of work completion on Unit 1. The decision for his termination was made by the Pullman General Foreman and was based on Mr. Hudson's relatively low seniority in his work area and his relatively low performance.

Contrary to the allegation, it is not usual practice to preferentially lay off "travelers" (members of out-of-town union halls) and retain workers from local unions until last. Such a course of action has been determined to be an unfair labor practice by the National Labor Relations Board and by the federal courts. Had Pullman followed the course proposed by Mr. Hudson, they would have left themselves open to legal actions by others.

At the request of PGandE, Mr. Hudson was rehired by Pullman on January 25, 1984, and is presently employed at Diablo Canyon. This action was taken not out of fear of losing wrongful discharge claims, but was initiated to ensure that the discussions of Mr. Hudson's technical questions would not be further clouded by claims of retaliation by Mr. Hudson.

In conclusion, Mr Hudson's layoff as a craft worker on January 13, 1984, occurred as a result of a normal reduction in the labor force, followed the standard Pullman practice for personnel selection, and in no way constituted reprisal for his disclosures to the Nuclear Regulatory Commission. No corrective action is required.

It is alleged that:

79. Another cause for the QA breakdown is subordination of PG&E's and Pullman's QA department to construction. Until recently, PG&E site QC did not review Pullman Discrepancy Reports. PG&E's Resident Mechanical Engineer, a construction official, reviewed and approved corrective action to discrepancies. As of May 1983, Pullman Internal Audits were not submitted to PG&E site QC for review but instead submitted to the Resident Mechanical Engineer. (citing Hudson Aff. at 30.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Karner, et al. Aff. at 14-16.

As discussed in the response, Mr. Hudson's allegation re-emphasizes his continued failure to understand or to follow the reporting requirements and review system in place at Diablo Canyon. From the time Pullman wrote the first DR to October 1, 1982, either a PGandE Minor Variation Report (MVR) or a PGandE Nonconformance Report (NCR) was prepared to document findings and corrective actions on essentially all Pullman DRS. As PGandE GC QC and PGandE Corporate QA personnel routinely reviewed the MVRs and NCRs, it is misleading to imply that PGandE did not review the Pullman DRS on which the MVRs and NCRs were based. Additionally, it is appropriate that PGandE's Resident Mechanical

Engineer review and approve corrective action to discrepancies identified by Pullman since he is responsible for administering Pullman's contract, including ensuring compliance with quality requirements.

While it is correct that the only PGandE representative on distribution for Pullman Internal Audits is the PGandE Resident Mechanical Engineer, other people on distribution include Pullman's Vice President of Quality Assurance, Pullman's Director of Quality Assurance, the Authorized Nuclear Inspector, and other Pullman supervisors. It would be incorrect to infer that PGandE QC and QA are by-passed. These two entities perform an audit function and, thus, they periodically (or as frequently as they desire) audit and review Pullman Internal Audits. In addition, the PGandE Corporate QA staff on site audits PGandE GC QC and the Contractors for compliance with all quality procedures including reporting discrepancies. No further action is required.

It is alleged that:

80. Another cause for the QA violations was lack of resources. To illustrate, from August 1980 to September 1982, Mr. Karner was the only permanent employee in the QA/QC site management. He did not have an assistant QA Manager, and the QC Supervisor was a temporary employee. (citing Hudson Aff. at 30.)

This allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 13-14.

As discussed in the response, Mr. Hudson is misleading in pointing out that the QC supervisor is not considered a "permanent" employee as he was not a member of Pullman's corporate organization. However, the QC supervisor is far from being a "temporary" employee since he has been with Pullman at Diablo Canyon for about nine years.

Contrary to the allegation, Pullman QA/QC site management, during the period in question, consisted of several key individuals who had long employment with the Company. In addition to Mr. Karner, a QA Supervisor, a QC Supervisor, and QC Leadmen were on the job. The presence of these individuals demonstrates that Pullman was dedicated to QA/QC and that there was not a lack of personnel resources. Consequently, no corrective action is required.

It is alleged that:

81. The QA breakdown was not due to PG&E ignorance. On repeated occasions, I identified many of the issues in this affidavit to a variety of officials within the PG&E supervisory and management staff. Although some officials listened and expressed agreement and/or sympathy, none of the violations were corrected. I believe that PG&E and Pullman have been gambling that the NRC will not enforce the QA laws, even if they are caught. For the sake of the public's health and safety, I hope that the NRC calls their bluff. (citing Hudson Aff. at 30-31.)

The subject of this allegation has been addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Karner, et al. Aff. at 16-17.

As indicated in the response, formal notification of concerns, such as letters and discrepancy reports, are always treated as controlled documents which receive appropriate management review and are tracked to assure that they are properly closed out. All formal notices are formally responded to and the corrective action taken, if any is necessary, is documented. Informal notices of concerns are considered and, if substantiated, are formally documented. Pullman's former internal auditor, Mr. Hudson, is known to have contacted PGandE GC and QC and QA personnel numerous times during his employment in Pullman QA/QC for information. If he informally notified them of perceived discrepancies, his approach was not in compliance with the approved procedures for documentation and tracking of such items. Informal notices do not automatically receive formal responses and, if the contacted organization determined the concern to be unsubstantiated, Mr. Hudson would not have necessarily received any reply. If Mr. Hudson were adequately performing his role, he should have instituted formal notice of concerns he felt important. Such notices would then receive a formal response.

SSER 22, Allegation #189

It is alleged that:

Magnaflux weld verification program accepted bad welds.

The subject matter of this allegation has been previously addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Arnold, et al. Aff. at 17-18.

As discussed in the response, the incomplete fusion to backing bars on rupture restraint weldments was observed by PG&E in August 1982. PG&E Nonconformance Reports DC1-B2-RM-N001 and DC2-B2-RM-N002 were established to identify and track the problem. An extensive program was established to review the welding procedure and weld. The weld's fitness for its intended design purpose was demonstrated by Engineering analysis or the weld was replaced or repaired.

No bad welds were accepted. No further corrective action is required as a result of this allegation.

SSER 22, Allegation #191

It is alleged that:

PG&E has the attitude that QC finds too many problems.
PG&E has directed that shop welds are not to be inspected.
No specifics were provided.

This allegation has been previously addressed in PG&E response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Breismeister, et al. Aff. at 39-43.

As discussed in the response, PG&E did suggest that Pullman need not inspect certain shop welds because, as explained in a letter dated July 26, 1982, the shop welds were already part of a major program which reviewed, evaluated, and repaired, where necessary, rupture restraint weldments. If shop welds directly affected Pullman work, however, shop welds should be reported.

Although many of the shop welds may be cosmetically unattractive, they have been evaluated and accepted by Project Engineering and meet code and design requirements. All thirty-one MVRs and associated contractor Discrepancy Reports that were issued have been closed, and no further corrective action is required as a result of this allegation.

SSER 22, Allegation #192

It is alleged that:

Acceptance criteria changed to decrease weld failure rate.

This allegation has been previously addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Arnold, et al. Aff. at 17-19. As explained in the response, field welds on rupture restraints were subjected to a major engineering evaluation program. While acceptance criteria were evaluated against and conformed to applicable requirements of AWS D1-1, the fitness of each weld for its intended design purpose was demonstrated by engineering analysis, or the weld was replaced or repaired.

There is no safety significance to this allegation, and no further corrective action is required.

SSER 22, Allegation #194

It is alleged that:

Document control is informal (rules made up as they go along).

The subject matter of this allegation was addressed in PGandE response dated March 19, 1984, to Joint Intervenor's Motion to Reopen on CQA, Geske, et al. Aff. at 20.

As indicated in the response, the specifications and standards against which pipe supports are inspected are contained in Pullman's Engineering Specification Diablo 223 (ESD-223), Rev. 08-23-83. The specifications are indeed subject to revision in accordance with formally approved procedural requirements. An examination of the revision documentation for ESD-223 shows that the revisions, including two which were implemented through formal memoranda, were all made and documented in accordance with the approved procedures. The examination also shows that all revisions were transmitted in a timely manner to the QC inspectors, also in conformance with the approved procedures. Thus, the inspection criteria were not established or superseded by "uncontrolled memoranda."

The subject matter of the second portion of this allegation is the control of "quick fix" modifications and was addressed in PGandE response dated March 5, 1984, to Joint Intervenor's Motion to Reopen on DQA, Breismeister, et al. Aff. at 39-43. As these indicated, design modifications that were approved in the field under the PSDTC program ("Quick Fix") were all accomplished under specific procedures. (PEI-12, DCM M-9, P-10, I-37, and I-40.)

This allegation has been fully addressed. No further action is required.

SSER 22, Allegation #193

It is alleged that there was:

Poor QC inspector selection and training.

This allegation has been previously addressed in PGandE response dated March 19, 1984, to Joint Intervenors' Motion to Reopen on CQA, Geske, et al. Aff. at 16-19 and 24-25.

As discussed in the response, prospective inspectors are interviewed and examined under an in-depth selection program. Once selected, the potential inspector participates in a thorough educational program which includes supervised field experience at the completion of his classroom training.

The present Pullman training and certification program meets industry standards and has been found acceptable by audits. Therefore, no corrective action is required.

SSER 22, Allegation #195:

It is alleged that:

Document control stamps are not controlled.

This issue was initially identified by a Pullman Power Products inspector, and DCN No. 1604-029 was prepared and submitted to supervision for corrective action. The DCN was closed on January 13, 1984. The stamps in question and their usage are explained below:

1. "NPO Clearance Required Prior to Work"

This stamp is used to inform the foreman in charge of the work that the system has been turned over to NPO, and a clearance must be obtained prior to the start of work. Misapplication or unauthorized use of this stamp would evoke an unnecessary clearance from NPO but in no way would have an adverse impact on plant safety.

2. "Piping Process Sheet Required"

This stamp is applied when welded attachments are to be made to pipes or when rerouting of pipe is required. A document so stamped requires sign-off by the QC inspector during the course of work. Misapplication or unauthorized use of this stamp would only necessitate additional QC inspection.

3. "No Pipe Process Sheets Required"

This stamp is used when hanger attachments are done by mechanical means rather than by welding. Misapplication or unauthorized use of this stamp could potentially cause a welded pipe attachment hanger to be issued for construction without a Piping Process Sheet. However, the crafts could not begin work since the weld procedures would not have been specified. Therefore, the misapplication of this stamp could only potentially cause a hanger to be reworked and would have no safety significance.

4. "ASWR Stamp"

This stamp "Alteration Support Work Request" is used when a complete hanger must be removed from the work completed status for additional work. Unauthorized use of this stamp would require forging the signature of an authorized individual and would only accomplish transferring a pipe hanger from a work complete status to a work to be accomplished status. It would become readily apparent when the QC inspector reinspected the hanger as is required when ASWR stamp is applied to a support drawing.

5. "Approved for Construction"

This stamp is placed on the design drawing by the Pullman Power Products Field Engineer prior to release to the foreman for work activity. The Field Engineer initials and dates this stamp. This stamp is used to assure the foreman that he is working with a design drawing that has been processed through the Pullman drawing control system. Unauthorized use of this stamp would require forging the signature of an authorized individual and would be difficult since the Field Engineer normally works with the foreman assigned to a particular work activity. Quality Control also uses these drawings to inspect and document their inspection points. Any misuse of this stamp would be detected in the normal course of QC inspector sign-off, Engineering QC or QA review.

Additionally, none of these stamps are used by themselves but in particular combinations with other stamps and other documents. Random misapplication would be readily apparent. Deliberate falsification using these stamps would be detected by the QA/QC system of inspections and reviews.

This allegation has been previously resolved, and no further corrective action is required.

SSER 22, Allegation #198

It is alleged that:

Foley QC person incorrectly handles work packages.

It is alleged that an acting Foley QC supervisor, Mr. Earl Squires, hid work packages in the file cabinets. As a result, the possibility of H. P. Foley quality control items being overlooked is implied.

This item was identified by a H. P. Foley inspector during the course of an exit interview. Mr. Squires subsequently left Diablo voluntarily for other employment. H. P. Foley has completed the evaluation of this concern, including an examination of Mr. Squires' work and a search of his desk and file cabinets for missing Quality Control documents. However, no work packages or Quality Control documents were found to be missing during the examination. The evaluation showed that Mr. Squires was, in fact, conducting his own in-depth review of selected documentation before passing it on to the records review group. This might explain an observation that he was holding documentation in his desk for extended periods of time.

In addition, all work packages receive a document review by H. P. Foley Company's Quality Control Document Review Group prior to the closure of the work package. A log is kept of all work packages to ensure that no package could be overlooked. During the document review of the work package any missing pertinent documentation would be identified on a nonconformance report, and the deficiencies would be corrected before the whole package could be finally analyzed. This provides additional assurance that all required Quality Control documents for a given work package have been identified, reviewed, and approved.

This allegation has been addressed, and no further corrective action is required.

SSER 22, Allegation #200 and #201

It is alleged that there were:

- a) NDE reports inconsistent with contractors inspection reports of welds.
- b) NDE reports improperly changed without proper approvals.

Review of the documentation supporting this allegation identifies the concern as being a limited one relating only to welds shown on Foley drawings 6180-F1-13-001, 006 and 007. Drawing 6180-F1-13-001 shows the welding in question to have been done during the 1982 modifications to the fuel handling building at elevation 153', walls S⁹ and V¹.

In a limited number of cases, PGandE's Department of Engineering Research (DER) conducted its NDE inspection of welds and recorded the weld number incorrectly on the NDE report. This error was one of identification number only and there was no possibility of an incorrect weld being inspected and, if necessary, repaired.

Foley QC marked up a copy of the NDE reports with an explanatory note so as to ensure that all parties were identifying the welds in question by the same number. At no time did QC improperly change a report. Each case of added information resulted in or from consultation with DER and had their concurrence.

The allegation that NDE reports were improperly changed without proper approval is not substantiated by the facts. Each full penetration weld to be NDE inspected is assigned two weld numbers. This is because the backside of the initial weld must be backgouged before the root of the second side is welded. Likewise, for inspection purposes, two separate and distinct operations are involved, one for each side, even though it is a single weld that is being inspected. Since the welds have two numbers, they must be inspected and approved separately and the rejection of one "weld" automatically by procedure requires the rejection of the other "weld." However, in the repair process, the repair and reexamination of one weld will result in the clearing of both weld numbers. Foley documents only called out the actual weld number repaired. If there was confusion about the actual orientation of the inspector, he might have identified the repaired weld as #1

instead of the correct identification as weld #2. However, as both welds #1 and #2 (or #3 and #4) were, in fact, part of the same weld, the actual repair of the deficiency would clear the entire weld, whatever the number identified. When such a discrepancy was found, be it the identification of weld #1 (#3) as #2 (#4) or vice versa, copies of the original reports were changed to note the correct number. In all cases, the welding/NDE data pack shows the actual as-built configuration and includes the necessary records to support all inspection activities and all welds received the appropriate inspection before acceptance.

In summary, under the program in place, all welds required to be examined by DER were examined, and all defective welds were removed and repaired. In addition, the repaired welds were reexamined by DER, and the work was verified by Foley QC. The results of original reports were not altered. The only "alteration" was the addition of a clarifying note on a copy of the report. Thus, no further corrective action is required.

EXHIBIT 1

Tube Dia. (in.)	Req'd t min (in.)	Actual Thickness (in.)	Excess (in.)	Min. Thickn. Recommended Prior to Bending (1.06 tm)	Required Allowance For Thinning (in.)	Wall Thickn. Tolerance Per ASTM 269 (in.)	Effective Wall Thickness After Bending (in.)
3/16	0.013	0.049	0.036	0.016	0.003	+0.002	0.044
1/8	0.008	0.035	0.027	0.010	0.002	+0.001	0.030
1/4	0.018	0.065	0.047	0.023	0.005	+0.003	0.057
3/8	0.026	0.065	0.039	0.033	0.007	+0.004	0.054
1/2	0.035	0.065	0.030	0.044	0.009	+0.004	0.052
3/4	0.053	0.095	0.042	0.066	0.013	+0.005	0.077
1"	0.071	0.095	0.024	0.089	0.018	+0.007	0.070

This table is for pipe specification design conditions (2500 psig at 650°F) and a bend radius of 3D.

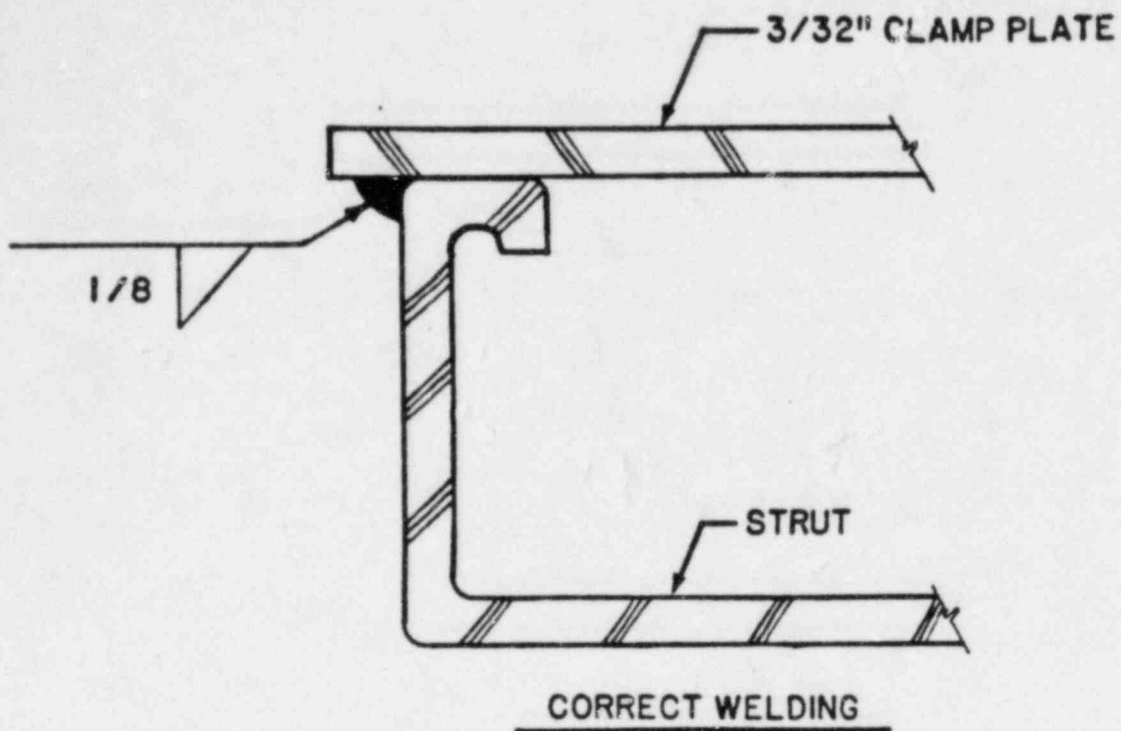


FIGURE 1

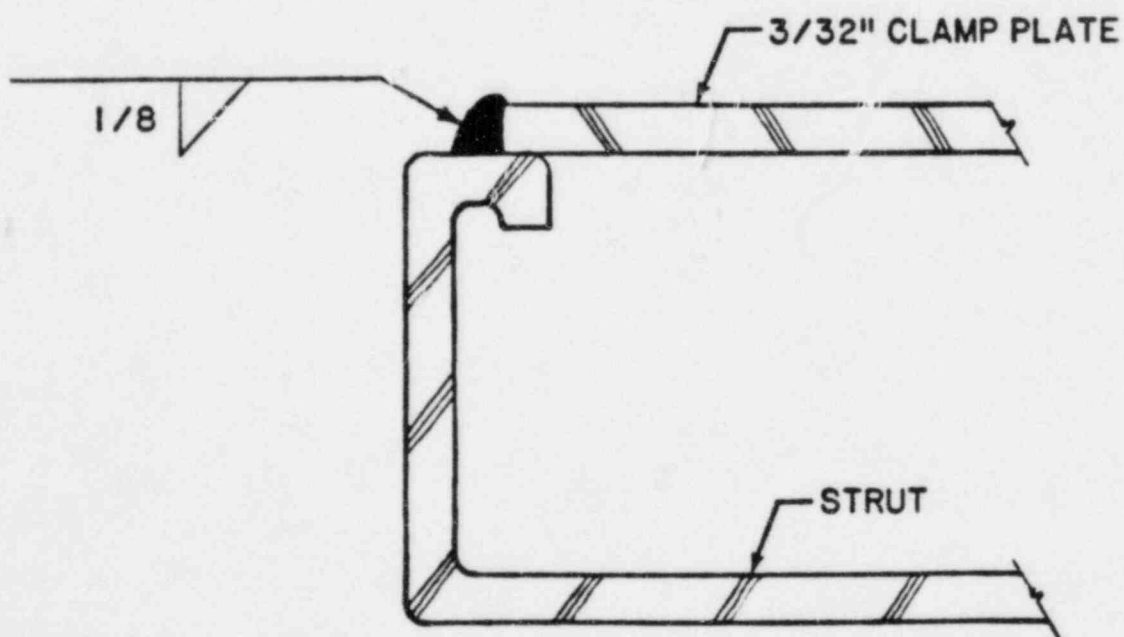


FIGURE 2