

701  
**GOVERNMENT ACCOUNTABILITY PROJECT**

Institute for Policy Studies

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July 31, 1984

Nunzio J. Palladino, Chairman  
Thomas Roberts, Commissioner  
James Asselstine, Commissioner  
Frederick Bernthal, Commissioner  
Lando Zech, Jr., Commissioner  
1717 "H" Street, N.W.  
Washington, D. C. 20555

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Re: Diablo Canyon Nuclear Power Plant, Units 1 and 2  
Docket Numbers 50-275 and 50-323 (2,206)

Dear Commissioners:

On behalf of Messrs. James McDermott and Timothy O'Neill, the Government Accountability Project (GAP) submits this supplement to Mr. O'Neill's July 27, 1984 petition under 10 CFR 2.206. With Mr. O'Neill's consent, Mr. McDermott is joining the action as a co-petitioner.

In addition to providing further evidence in support of the July 27 petition, Messrs. O'Neill and McDermott also expand the original request for retraining. Instead of just requesting retraining for all personnel in organizational freedom required by 10 CFR 50, Appendix B, Criterion I, petitioners request Commission-approved retraining for all project personnel, including management, for --

- 1) all 18 quality assurance criteria of 10 CFR 50, Appendix B; and
- 2) the meaning and the provisions in the Atomic Energy Act and U.S. Code for false statements to the government, the penalties for such violations, and the NRC's enforcement policy toward that portion of the law.

The basis for the expanded retraining request is Mr. McDermott's experience last week with fraudulent retraining programs. Mr. McDermott's July 30, 1984 affidavit is enclosed as attachment 1. On three occasions he was asked to sign his certification for participation in activities that did not occur and for his review of retraining materials that had not been distributed. In one case the false statements were so crude that Mr. McDermott was told to sign a blank form.

On Saturday, July 28, two days after he refused to engage in this criminal act, Mr. McDermott was laid off. Mr. McDermott was a highly-qualified veteran welder at Diablo Canyon, but he was laid-off while fresh recruits with limited certifications were retained. Mr. McDermott also was known to Diablo Canyon project management as a whistleblower who has submitted numerous affidavits to the NRC staff and met with the Office of Investigations. Management knew, because the staff blew

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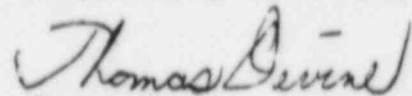
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Mr. McDermott's cover by turning censored but easily-traceable versions of his affidavits over to the utility. Finally, Mr. McDermott was known as an associate who helped Mr. O'Neill prepare his quality assurance reports. To personnel on-site, the message from Mr. McDermott's layoff, last Saturday was clear: in response to Mr. O'Neill, management is cracking down instead of cleaning up its program.

That is odd, since last Friday at a press conference Pacific Gas and Electric Company (PG&E) and Bechtel assured the public that they welcome reports of problems at the plant. That was only one of many false statements to the public by the licensee and Bechtel last Friday. In a July 31, 1984 affidavit and exhibits enclosed as Exhibit 2, Mr. O'Neill details 7 additional cases. As Mr. O'Neill explains in his affidavit, these false statements are relevant for an operating license, because "[i]f there is ever an accident at Diablo Canyon, we have to be able to rely on the utility to tell the truth." 1)

The enclosed evidence demonstrates a basic truth at Diablo Canyon: after thirteen years the quality assurance breakdown is continuing. Rather than a housecleaning, the 1984 version of the program is still producing repetitive violations. This is inevitable, as long as the program is characterized by false statements and phoney retraining programs. Under the law that is no foundation for an Atomic Energy Act license.

Respectfully submitted,



Thomas Devine  
Counsel for Messrs. McDermott  
and O'Neill

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1) The exhibits to Mr. O'Neill's July 27 affidavit also are enclosed. They had been withheld to avoid compromising the ongoing cases at the Office of Investigations, but on Monday the Atomic Safety and Licensing Appeal Board ordered the disclosure of the most recent evidence.



JML

A F F I D A V I T

My name is James L. McDermott. I am submitting this affidavit freely and voluntarily to Mr. Thomas Devine, who has identified himself to me as the legal director of the Government Accountability Project and who serves as my attorney for disclosures to the Nuclear Regulatory Commission. I have instructed Mr. Devine to add my name to the petition submitted by Mr. Timothy O'Neill on July 27, 1984 with Mr. O'Neill's permission, which he has supplied. This affidavit is in support of the joint petition. My own case provides a clear illustration of the need both for reinspections and systematic retraining of all personnel at Diablo Canyon.

On Saturday, July 28, I was laid off from my job as a welder for Pullman Power Products at Diablo Canyon, two days after I refused to sign three statements certifying my participation in retraining programs on various matters. I refused because I would have been engaging in a false statement if I had signed. In one case, I was asked along with others to sign a blank form <sup>JML CERTIFYING MY PARTICIPATION IN AN UNIDENTIFIED TRAINING SESSION THAT HAD NEVER OCCURRED.</sup> To show how badly things have deteriorated, 15 other employees signed the form.

Since January 1984 I have been a witness in the ongoing Nuclear Regulatory Commission (NRC) investigation at Diablo Canyon. During that time I have submitted five affidavits and

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JML

JMS

met with the NRC on three occasions, including twice with the Office of Investigations (OI). Earlier this month I settled a Department of Labor lawsuit which had charged retaliation in an earlier layoff. I was a confidential witness, until the NRC technical staff blew my cover by turning over a copy of my affidavit to Pacific Gas and Electric (PG&E). Although my name was whited-out, the issues in my statement were traceable back to me since I had challenged the same violations on-site. PG&E promptly published my name in a licensing brief. With my cover already blown, there was no reason to hold back and my wife began serving as a public spokesperson for the Consumers in Defense of Energy Safety (CODES). PG&E claimed that my continued employment at Diablo Canyon helped rebut charges of harassment for NRC whistleblowers. PG&E's licensing brief is enclosed as Exhibit 1.

The events surrounding my layoff began last Thursday, July 25, when four handouts were distributed to personnel in the shop. Each handout was for retraining through the "Steps to Prevent Recurrence" (STPR) corrective action program. We were all supposed to sign that we had been retrained on each problem, after studying each handout. I signed one of the forms but I had to refuse to sign three others. The other three STPR forms involved problems with -- 1) flowmeters to control the release of gas in Gas Tungsten Arc Welding (GTAW); 2) falsified traceability records for certain plates; and 3) cutting of crushable bumpers.

JMS

gm

The STPR on flowmeters contained the crudest falsification. It is enclosed as Exhibit 2. In essence we were asked to sign a form certifying our attendance in a retraining program that was never conducted. The form was blank<sup>gm</sup> for all the spaces describing the retraining, including "Nature of Instruction", "Date", "Time", and "Instructor". Further, our signatures certified that we had participated in discussions and reviewed additional information. The discussions never occurred and the referenced information was not included in the handout. Fifteen people signed anyway. I talked with several people about why they signed a blank check. As one explained, he didn't want to have trouble.

This phoney retraining program concerned a generic deficiency highly significant to plant safety. The flow of gas keeps out undesirable atmosphere during the welding process. Too much or too little gas can lead to unacceptable quality such as oxidation, <sup>gm</sup>porosity<sup>gm</sup>, ~~porosity~~, cracking, embrittlement and excessive cost. The fraudulent retraining program means that the shoddy welding probably will continue for the thirteenth year in a row.

The STPR on traceability of plates concerned falsified purchase order identification records. It is enclosed as Exhibit 3. I could not sign the form, because the referenced procedures and quality assurance (QA) records were not included.

I had raised this same issue near the end of June with the production foreman. He said that maybe I should remove the phoney Purchase Orders <sup>gm</sup>NUMBER FROM THE PLATE. <sup>gm</sup> Before that happened, however, a QC

gm

JM:

inspector identified the problem and wrote a Deficient Condition Notice (DCN). The inspector suffered severe harassment for writing the report, including a public dressing down from the craft superintendent and construction workers who shook their fists in his face. Based on his experience, I believe that my initiative in raising the same issue to a foreman helped lead to my layoff.

The third STPR concerned the improper cutting of crushable bumpers, which are thin-gauged tubing welded to resemble square honeycombs. They are used to absorb the impact in the event of a ruptured pipe. The STPR is enclosed as Exhibit 4. I could not sign this form, because the referenced procedure was not attached.

The training continues to be inadequate on a generic basis. For example, the recent "training" on harassment basically was to pass out a memo saying that we could be disciplined up to termination if we harassed QC. The memo itself was a signal that management was pulling its punches: harassment would not necessarily cost a worker his job if he were caught. There were not any classes, or even discussions about a problem that has been getting out of control.

In other cases the handouts were inadequate as retraining documents, because the craft workers had never been trained sufficiently the first time to understand the terms in the QA reports. I know, because various welders asked me what the documents meant. They came, because I was a former QC inspector.

JM:

JMc

On Thursday, July 26th, after reviewing the STPR handouts, I sought out the QC inspector. I told him this was bull, because we would be signing for documents and events that were not there. He agreed and said he would notify the Resident Inspector.

At the end of the shift, the foreman asked me to sign the STPR forms. I refused on three out of four. He asked me to point out to him what was the matter, which I did. He said he saw my point and agreed with me that a good training program should have begun 13 years ago.

Despite his agreement with my criticisms, the foreman said that the superintendent would still want me to sign. He also said that maybe we should fill in the blanks on the training form for flowmeters. I said maybe we shouldn't. I believe that raising this problem of false statements internally, refusing to participate, and refusing to cooperate with a coverup contributed to my layoff.

On Friday the QC inspector told the NRC's Resident Inspector, Mavin Mendonca, of the STPR problems. JMc

JMc

On Friday Tim O'Neill also filed his petition and held a press conference. Tim is a friend of mine, which was well-known

JMc



on-site. We ate lunch together regularly, where in plain view I often reviewed or helped him to prepare reports of QA violations. We ate lunch together on Tuesday, July 24, the day Tim resigned. I believe that my layoff the day after his press conference in part was further retaliation due to guilt by association.

On Saturday, July 28 I was laid off, along with one other welder out of around 15 in our shop. The other employee was a traveler -- a member from another local outside of this union's jurisdiction, with a travel card. Although it is not a formal rule, travelers usually are laid-off first. In fact, another brother said to me that he should of been laid off because he was a travelcard holder and that I was a local member.

I believe that my layoff was retaliatory for three reasons: 1) The time lag was two days after I refused to sign three false statements and one day after my friend Tim went public on a series of QA violations including some which I had openly helped him to prepare at the job site. 2) Over half the rest of the crew were travelers. 3) Two of the travelers were welders hired about two weeks earlier. They had only passed the basic gate, or entry, test. By contrast, I had been certified to unlimited thickness after passing the heavy wall test. In fact, I had just trained these two welders, to replace me as it turned out.

When I was laid off the foreman said that it was not just his decision; that management also was involved. He denied that

gmc


there were any "politics" involved, however. A Bechtel supervisor told me that he was sorry to see me go, because I never missed anytime, was always working and was better qualified as a welder than those who kept their jobs. He said that didn't make sense from an economic standpoint. He added that he had made the same point to Pullman and Bechtel management, without any success.

I am familiar with the conclusions in the 1977 Nuclear Services Corporation (NSC) audit about a quality assurance breakdown. I can state without question that it is continuing without letup. If there has been corrective action, the effects have been invisible. The QA breakdown continues, because those of us who try to uphold the NRC laws are either ignored; harassed until they resign as with Tim; or laid-off like myself. I am joining Tim's petition, because the NRC must crack down to restore respect for its rules at Diablo Canyon. If the Commission licenses the plant instead, it will be a clear message that the Atomic Energy Act no longer is worth the paper it is written on.

I have read the above 7 page affidavit, and it is true, accurate and complete to the best of my knowledge and belief.

James L. McDermott  
James L. McDermott

STATE OF <u>California</u>	}	ss.
COUNTY OF <u>San Luis Obispo</u>		
ON <u>30 July</u> , 19 <u>74</u>		
before me, the undersigned, a Notary Public in and for said State, personally appeared <u>James L. McDermott</u>		
<u>known to me by satisfactory evidence</u> known to me,		
to be the person whose name <u>was</u> subscribed to the within instrument,		
and acknowledged to me that <u>he</u> executed the same.		
WITNESS my hand and official seal.		
<u>Michael S. Krout</u> Notary Public in and for said State.		



MICHAEL S. KROUT  
NOTARY PUBLIC-CALIFORNIA  
PRINCIPAL OFFICE IN  
SAN LUIS OBISPO COUNTY  
My Commission Expires Jan. 25, 1985

ADDITIONAL CERTIFICATE—General—Notarials Form 125—Rev. 3-61

EXHIBIT 1

1 UNITED STATES OF AMERICA  
2 NUCLEAR REGULATORY COMMISSION  
3 BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD  
4

5  
6 In the Matter of )  
7 PACIFIC GAS AND ELECTRIC COMPANY )  
8 (Diablo Canyon Nuclear Power )  
9 Plant, Units 1 and 2) )

Docket Nos. 50-275 O.L.  
50-323 O.L.

10 APPLICANT'S REPLY TO JOINT INTERVENORS'  
11 MOTION FOR PROTECTIVE ORDER

12 The Joint Intervenor, by motion dated June 11,  
13 1984, have sought a protective order for Exhibits 3, 4, 7,  
14 and 10 which were submitted in support of their reply to  
15 PGandE and Staff responses to the Joint Intervenor's latest  
16 motion to reopen.

17 Neither the Staff nor PGandE were served copies of  
18 those exhibits, and the Joint Intervenor by their motion  
19 have requested that access to the substance of the exhibits  
20 be denied to the Staff and PGandE (JI motion pp. 5-6). It  
21 is PGandE's understanding that this Board has received such  
22 exhibits but in an edited form with the names of affiants  
23 and other identifying material removed. On receipt of the  
24 motion for a protective order, this Board issued an order  
25

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1 requesting response to the motion and certain questions by  
2 June 19, 1984.<sup>1</sup>

3 I. DISCUSSION

4 Joint Intervenors' motion for a protective order  
5 is predicated on two points. The first is that the informa-  
6 tion given in each subject exhibit is conditioned by the  
7 affiant that it not be released to the Staff or the Appli-  
8 cant. The second is that the withholding of the substance  
9 of the exhibits is necessary to protect the anonymity of the  
10 affiants.<sup>2</sup>

11  
12 <sup>1</sup>The order requested Staff and PGandE to answer the  
13 following:

- 14 (1) What documents were served on the applicant and the  
15 staff as joint intervenors' reply?  
16 (2) If the same documents, in the same form, as those  
17 served on the Appeal Board were received by the  
18 applicant and the staff, is there any need for a  
19 protective order?  
20 (3) Is the Commission's policy statement of August 5, 1983,  
21 48 Fed. Reg. 36,358, applicable to joint intervenors'  
22 request for a protective order? If so, with what  
23 result?  
24 (4) If the Commission's policy statement is not applicable,  
25 is the protective order sought by joint intervenors  
26 appropriate in the circumstances presented?  
27 (5) If the protective order sought by joint intervenors is  
28 not appropriate, is a less encompassing order suitable?

29 <sup>2</sup>Although Joint Intervenors claim the informers  
30 privilege, this Board has previously acknowledged that the  
31 privilege may be claimed only by the government. Houston  
32 (Footnote Continued)



1 Joint Intervenors seek to reopen the record based  
2 in part on new affidavits, the substance of which they seek  
3 to keep from Applicant. Fundamental to the acceptance of  
4 such affidavits as evidence upon which this Board may rely  
5 is the underlying truthfulness and veracity of the affiants  
6 and the factual basis for establishing that the affiants  
7 possess the necessary expertise to offer opinion testimony.  
8 By the requested terms of their motion for a protective  
9 order, Joint Intervenors attempt to restrict this Board in  
10 its function by not allowing the substance of the affidavits  
11 from seeing the light of day. Such a process, if allowed,  
12 would be extremely prejudicial to Applicant and approaches a  
13 trial in absentia.<sup>3</sup>

14  
15 (Footnote Continued)

16 Lighting and Power Company (South Texas Project Units 1 and  
17 2), ALAB-639, 13 NRC 469, (1981), footnote 26 at 478. See  
18 Roviaro v. United States, 353 U.S. 53, 59 (1957). In this  
case, rather than advancing the interest of the government  
in its investigation of the truth, Joint Intervenors seek to  
use the privilege to thwart such investigation.

19 <sup>3</sup>With this unexamined evidence, Joint Intervenors claim  
20 that a "cloud" hangs over the adequacy of the safety-related  
21 design and construction at Diablo Canyon citing Commonwealth  
22 Edison Company (Byron Nuclear Power Station Units 1 and 2)  
23 ALAB 770. That case is distinguishable from the instant  
24 proceeding. First, the "cloud" there was not  
25 unsubstantiated claims which had not even been examined, but  
rather the Licensing Board's findings made after hearing and  
Staff determinations over a period of years. In this case,  
Joint Intervenors seek to manufacture a "cloud" with  
anonymous affidavits which they refuse to expose to  
Applicant or Staff. The uncertainty that existed in Byron  
was that which was the result of findings, not merely

(Footnote Continued)



1 As to the first point, every citizen has an  
2 obligation to provide evidence, when necessary, to further  
3 the system of justice. Consumers Power Company (Midland  
4 Plant, Units 1 and 2) ALAB 764, Slip Opinion March 30, 1984.  
5 Houston Lighting and Power Company (South Texas Project,  
6 Units 1 and 2) ALAB 639, 13 NRC 469, 473 (1981). Wright v.  
7 Jeep Corp., 547 F.Supp. 871, 875 (E.D. Mich. 1982). See  
8 Branzburg v. Hayes, 408 U.S. 665, 688 (1972), Roviaro v.  
9 United States, 353 U.S. 53, 59 (1957). Since every citizen  
10 has such a duty which arises from his citizenship, he  
11 cannot, on his own, condition his civic obligation. Thus,  
12 affiants cannot tell this Board that they will give it  
13 information only if the Board agrees, contrary to

14  
15  
16  
17 (Footnote Continued)  
18 unsubstantiated allegations in support of a motion to  
19 reopen. Second, this is not a case where there has not yet  
20 been a hearing on the Applicant's verification program as  
21 was the case in Byron. Here, an extensive hearing on Design  
22 Quality Assurance and the adequacy of the verification  
23 program which was established pursuant to Commission order,  
24 has already been held. In Byron, Applicant argued that a  
25 hearing was not necessary even while the verification  
26 program was not complete. The Appeal Board remanded the  
case to take evidence on the completed verification program.  
Here the verification program has been completed and has  
been already subjected to hearing. Finally, in Byron, the  
Appeal Board found a hearing was necessary because one of  
the principle deficiencies that existed was the established  
absence of adequate certification procedures for quality  
control personnel. Such fundamental absence of proper  
certification is not present here.

1 requirements of law, not to relay it to a party whose rights  
2 or duties are being litigated.<sup>4</sup>

3 As to the second point, Joint Intervenors claim  
4 that because of inadequate editing of prior affidavits by  
5 the NRC Staff, Applicant was able to identify three of the  
6 anonymous alleged. As to these three alleged, they claim  
7 in an unsupported allegation that, "Since February 16, all  
8 three individuals have been laid off or suffered harassment  
9 on-site" (6/7/84 Devine Aff. at 3). Curiously, the docu-  
10 ments executed by the anonymous alleged which disclosed  
11 identifying material were not released to Applicant until  
12 April 26, 1984. No person was laid off or harassed as a  
13 result of his allegations (Exhibit 1, attached). As a part  
14 of normal reductions of force, two of the three were laid  
15 off earlier this year, but each was rehired by April 9,  
16 1984, prior to the date of release of the affidavits to  
17 Applicant. All three are currently employed at the site,  
18 and there have been no reports of harassment by any of these  
19 individuals from any source whatsoever. Consequently the  
20

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21 <sup>4</sup>While GAP and Joint Intervenors may consider  
22 themselves as chartered to ensure that the NRC satisfies its  
23 statutory duties, they cannot sua sponte substitute  
24 themselves for the governmental body which Congress charged  
25 with the duty to regulate, investigate, and license nuclear  
26 power plants. Consequently, the investigative arm of the  
Commission, its staff, cannot be deprived of the substantive  
information contained in Exhibits 4, 5, 7, and 10 or the  
names of the informers.

1 pivotal grounds for the request for the protective order are  
2 based, at best, a misleading affidavit.<sup>5</sup>

3 As acknowledged by this Board in the case of  
4 Consumers Power Company (Midland Units 1 and 2) ALAB-764,  
5 supra., the informer protection extends only to the identity  
6 of the informer and not to the substance of the information  
7 provided.<sup>6</sup> See Roviaro v. United States, supra. at 60.

8 Applicant has no other means of access to the  
9 allegations which are contained in Exhibits 3, 4, 7, and 10.  
10 It is the substance of those allegations and not the identi-  
11 ty of the allegeders which is of importance to Applicant,  
12 Staff, and this Board.

13  
14  
15 <sup>5</sup>This pivotal allegation should give the Board cause to  
16 question the veracity and forthrightness of Joint  
17 Intervenor's allegations. While the allegation in the  
18 affidavit is that the three individuals were either laid off  
19 or suffered harassment since February 16, 1984, it is clear  
20 that the layoffs were not related to their affidavits and  
21 that the individuals involved were even reemployed prior to  
the release of their affidavits. It is also clear that  
there is an absence of harassment as a result of their  
allegations. Given such inclination to stretch the facts,  
this Board must scrutinize all claims of Joint Intervenor's.

22 <sup>6</sup>As in the Consumers Power case ALAB 764 supra., there  
23 is no issue of privilege involved here. Any confidentiality  
24 that may have existed between Thomas Devine, affiant, and  
25 the anonymous allegeders was clearly breached when disclosure  
26 was made to Joint Intervenor's and their counsel. While  
Thomas Devine has acted, in other matters, on behalf of  
Mothers for Peace, one of the Joint Intervenor's, he is not  
counsel of record on behalf of all Joint Intervenor's in this  
action.

1           Accordingly, should the Board be able to determine  
2           qualification of the affidavits, the Board should release  
3           Exhibits 3, 4, 7, and 10 in the form they have without a  
4           protective order.

5           II.   RESPONSE TO BOARD CERTIFIED QUESTIONS

6           A.   As indicated above, PGandE did not receive  
7           Exhibits 3, 4, 7, and 10 with Joint Intervenors' reply. If,  
8           in fact, it is the case that this Board received the exhib-  
9           its without the names or other identifying material as  
10          edited by anonymous allegers, it would appear that consis-  
11          tent with protection of informers' interest, this Board  
12          could release the substance of the exhibits to the Staff and  
13          Applicant, and no protective order would be necessary.

14          B.   Applicant does not see that the Commission  
15          policy statement of August 5, 1983 (48 Fed.Reg. 36358),  
16          applies since the subject information is not in the pos-  
17          session of or originated by the Staff in its ongoing inves-  
18          tigation or inspection.

19          C.   The protective order sought by Joint  
20          Intervenors far exceeds what is required to protect the  
21          interest of the anonymous informants and if granted as  
22          requested would prejudice Applicant and Staff and interfere  
23          with the Board's obligation to ascertain the truth of the  
24          matters placed before it.

25          E.   As acknowledged by the Board in Consumer  
26          Power Co. (Midland Units 1 and 2) ALAB 764 supra., a



1 protective order which provides for deletion of names and  
2 other identifying material is appropriate for protection of  
3 informers' interests.

4 Applicant would suggest, however, that the Board  
5 should be presented with unedited versions of the Exhibits  
6 in camera so that it can ascertain that the affidavits are,  
7 in fact, of persons other than those who have previously  
8 provided affidavits. Thereafter, upon qualification of the  
9 affidavits, the Board should determine if the edited version  
10 protects the informers identity or whether, on weighing of  
11 the interests of the parties, a further modification should  
12 be made prior to release to Staff and the Applicant.<sup>7</sup>

13 Alternatively, if the Board determines that the affidavits  
14 cannot be accepted, then they should be rejected outright.

15 Applicant would like to point out that while Joint  
16 Intervenors are seeking extraordinary relief from this  
17 Board, they do not approach the Board with altogether "clean  
18 hands." The allegations they submit, beyond being repeti-  
19 tious, have been tortiously dragged through the licensing  
20

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21  
22 <sup>7</sup>If Exhibits 4, 5, 7, and 10 contain new materials,  
23 obviously Applicant should be afforded the opportunity to  
24 respond since they constitute a new motion and not a reply  
25 to Applicant's prior response to Joint Intervenors Motion to  
26 Reopen. Applicant is in the process of responding, inter  
alia, to the new material contained in the June 11, 1984,  
"Reply" of Joint Intervenors and will submit its responses  
to the Board by June 29, 1984.



1 process over in excess of six months time. Affiant  
2 Thomas Devine has stated under oath that "for the previous  
3 seven months," he has "been conducting an investigation of  
4 alleged illegal or improper practices at the Diablo Canyon  
5 nuclear powerplant" (6/7/84 Devine Aff. at 1). It is not  
6 inconceivable that Joint Intervenors and their associated  
7 representatives would continue this pattern of conduct over  
8 the next several months even though they have been inves-  
9 tigating the matter for over at least six months. Applicant  
10 would submit, therefore, that if Joint Intervenors seek  
11 equity, they must do equity. That should certainly extend  
12 to providing the substance of their claims.

13 III. CONCLUSION

14 Applicant submits that consistent with due process  
15 and in the interest of fair play and justice, it is vitally  
16 necessary that it have access to the substance Exhibits 3,  
17 4, 7, and 10. Applicant requests that Exhibits 3, 4, 7, and  
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26

1 10 be released to Staff and Applicant, or alternatively be  
2 rejected by the Board if they fail to meet minimal  
3 requirements for affidavits.

4 Respectfully submitted,

5 ROBERT OHLBACH  
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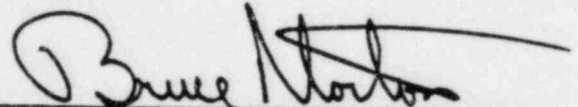
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17 Attorneys for  
18 Pacific Gas and Electric Company

19 Dated: June 18, 1984

20 By

21   
22 Bruce Norton  
23  
24  
25  
26

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of )

PACIFIC GAS AND ELECTRIC COMPANY )

(Diablo Canyon Nuclear Power )  
Plant, Units 1 and 2) )

Docket Nos. 50-275  
50-323

(Construction Quality Assurance)

AFFIDAVIT OF D.A. Rockwell

STATE OF CALIFORNIA )

CITY & COUNTY OF SAN FRANCISCO )

ss

The above, being duly sworn, deposes and says:

I, D.A. Rockwell, am Special Projects Engineer for the Pacific Gas and Electric Company at the Diablo Canyon Nuclear Power Plant. In such capacity, I work directly with management of Pullman Power Products and the H.P. Foley Company who are contractors on site at the Diablo Canyon Nuclear Project. In such capacity I am informed of personnel shifts and force changes of each organization. I have caused that the employment files be reviewed of the three individuals who were identified in the May 17, 1984 submittal of PGandE: Mr. J. McDermott, Mr. T. O'Neal, and Mr. J. Phillips. I have also investigated the possibility of the existence of any claims of harassment made by any of these three individuals as a result of the affidavits. Contrary to the representation of Thomas Devine, no harassment or reprisal by PGandE or its contractors against any of the three individuals has resulted from their anonymous allegations.

8406200321

Mr. J. McDermott was hired by Pullman on May 13, 1983. In a scheduled force reduction on January 13, 1984, Mr. McDermott was let go by Pullman. He was rehired by Pullman on April 9, 1984. He currently works for Pullman.

Mr. J. Phillips was originally hired by PTGC on March 31, 1983 and, as part of a scheduled force reduction, was let go on March 23, 1984. His ranking in March 1984 was 143 out of 147. Subsequent to his layoff by PTGC he was hired by Pullman on April 9, 1984. He currently works for Pullman.

Mr. T. O'Neal was hired by Pullman as a QC inspector on July 5, 1983 and currently is working for Pullman in that capacity.

The two individuals who were laid off were let go as a result of legitimate reduction of force, and not as the result of any allegation or affidavit they may have signed. Both were let go prior to April 26, 1984, the date when NRC first released the affidavits to PGandE.

Investigation has revealed no reports of harassment by any of these three individuals as a result of their allegations. There have been no reports to their supervisors. There have been no hot-line reports, and there have been no reports by union representatives regarding these individuals.

Mr. T. O'Neal did for the first time come to my office on June 12, 1984, the day after the Joint Intervenors motion was filed, to speak to me about his alleged quality concerns. He demanded my written response to his concerns.

He did not inform me of any physical threats, social harassment or reprisals of any kind resulting from his allegations.

Dated: June 19, 1984

\_\_\_\_\_  
D.A. Rockwell

Subscribed and sworn to  
before me this 19th day  
of June, 1984

\_\_\_\_\_  
Nancy J. Lemaster,  
Notary Public in and for the  
City and County of San Francisco  
State of California.  
My commission expires  
April 14, 1986.



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 )  
PACIFIC GAS AND ELECTRIC COMPANY ) Docket No. 50-275  
 ) Docket No. 50-323  
Diablo Canyon Nuclear Power Plant, )  
Units 1 and 2 )  
\_\_\_\_\_ )

CERTIFICATE OF SERVICE

The foregoing document(s) of Pacific Gas and Electric Company has (have) been served today on the following by deposit in the United States mail, properly stamped and addressed:

Judge John F. Wolf  
Chairman  
Atomic Safety and Licensing Board  
US Nuclear Regulatory Commission  
Washington DC 20555

Judge Glenn O. Bright  
Atomic Safety and Licensing Board  
US Nuclear Regulatory Commission  
Washington DC 20555

Judge Jerry R. Kline  
Atomic Safety and Licensing Board  
US Nuclear Regulatory Commission  
Washington DC 20555

Mrs. Elizabeth Apfelberg  
c/o Betsy Umhoffer  
1493 Southwood  
San Luis Obispo CA 93401

Janice E. Kerr, Esq.  
Public Utilities Commission  
State of California  
5246 State Building  
350 McAllister Street  
San Francisco CA 94102

Mrs. Raye Fleming  
1920 Mattie Road  
Shell Beach CA 93449

Mr. Frederick Eissler  
Scenic Shoreline Preservation  
Conference, Inc.  
4623 More Mesa Drive  
Santa Barbara CA 93105

Mrs. Sandra A. Silver  
1760 Alisal Street  
San Luis Obispo CA 93401

Mr. Gordon Silver  
1760 Alisal Street  
San Luis Obispo CA 93401

John Phillips, Esq.  
Joel Reynolds, Esq.  
Center for Law in the Public Interest  
10951 W. Pico Blvd. - Suite 300  
Los Angeles CA 90064

David F. Fleischaker, Esq.  
P. O. Box 1178  
Oklahoma City OK 73101

Arthur C. Gehr, Esq.  
Snell & Wilmer  
3100 Valley Bank Center  
Phoenix AZ 85073

Bruce Norton, Esq.  
Norton, Burke, Berry & French, P.C.  
P. O. Box 10569  
Phoenix AZ 85064

Chairman  
Atomic Safety and Licensing  
Board Panel  
US Nuclear Regulatory Commission  
Washington DC 20555

Chairman  
Atomic Safety and Licensing  
Appeal Panel  
US Nuclear Regulatory Commission  
Washington DC 20555

Secretary  
US Nuclear Regulatory Commission  
Washington DC 20555

Attn: Docketing and Service  
Section

\*Lawrence J. Chandler, Esq.  
Henry J. McGurren  
US Nuclear Regulatory Commission  
Office of Executive Legal Director  
Washington DC 20555

Mr. Richard B. Hubbard  
MHB Technical Associates  
1723 Hamilton Avenue Suite K  
San Jose CA 95125

Mr. Carl Neiberger  
Telegram Tribune  
P. O. Box 112  
San Luis Obispo CA 93402

Michael J. Strumwasser, Esq.  
Susan L. Durbin, Esq.  
Peter H. Kaufman, Esq.  
3580 Wilshire Blvd. Suite 800  
Los Angeles CA 90010

Maurice Axelrad, Esq.  
Lowenstein, Newman, Reis, and  
Axelrad, P.C.  
1025 Connecticut Ave. NW  
Washington DC 20036

\*Judge Thomas S. Moore  
Chairman  
Atomic Safety and Licensing  
Appeal Board  
US Nuclear Regulatory Commission  
Washington DC 20555

\*Judge W. Reed Johnson  
Atomic Safety and Licensing  
Appeal Board  
US Nuclear Regulatory Commission  
Washington DC 20555

\*Judge John H. Buck  
Atomic Safety and Licensing  
Appeal Board  
US Nuclear Regulatory Commission  
Washington DC 20555

Commissioner Nunzio J. Palladino  
Chairman  
US Nuclear Regulatory Commission  
1717 H Street NW  
Washington DC 20555

Commissioner Frederick M. Bernthal  
US Nuclear Regulatory Commission  
1717 H Street NW  
Washington DC 20555

Commissioner Victor Gilinsky  
US Nuclear Regulatory Commission  
1717 H Street NW  
Washington DC 20555

Commissioner James K. Asselstine  
US Nuclear Regulatory Commission  
1717 H Street NW  
Washington DC 20555

Commissioner Thomas M. Roberts  
US Nuclear Regulatory Commission  
1717 H Street NW  
Washington DC 20555

Date: June 18, 1984

\*Via Sky Courier Network

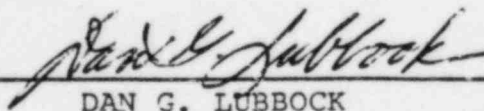
  
DAN G. LUBBOCK

EXHIBIT 2

96059

Bulanan

POSTIEGER

7-24-84

CON/DR is issued for your STEPS TO PREVENT REOCCURRENCE

of the following incident:

1. Training record form to document STAR.

2. STAR must be completed promptly and correctly with

adequate documentation. Return to me by ASAP - Tim Roberts  
Box IN m.o.

Train Area 10  
DAP (Hes Crew)

Paul L. Steiger

TRAINING SHEET

NATURE OF INSTRUCTION: ESD 201. PARA 3.2; QAT 152 PAR 11.5;  
DATE: 7-24-84 12 KFP-10 par 10.1.5.E  
NAME: \_\_\_\_\_ INSTRUCTOR: \_\_\_\_\_

ATTENDED BY:

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# ORIGINAL

NO TEST PKG 1 OK

7/10/84

II	AREA 10 FAB SHOP	ELEV.	COL/LINE	DATE 6-29-84	NOTICE NO. 96-059
----	---------------------	-------	----------	-----------------	----------------------

DEFICIENT CONDITION: ON 6-29-84 AT APPROXIMATELY 11:00 A.M. I NOTICED A PECULIARITY ON SOME 1" THICK PLATES LYING ON DUNNAGE INSIDE THE NORTH END OF THE FAB SHOP AT AREA 10 - CONT.

ORIGINATOR'S SIGNATURE:

*C. Craig*

-OLD TAG APPLIED: 6-28-84	TAG # 96-059	INITIALS RUM/196	DATE 6-28-84 / 7-6-84
------------------------------	-----------------	---------------------	--------------------------

RECOMMENDED DISPOSITION:

INSTRUCT APPROPRIATE CRAFT AND Q.C. INSPECTORS AS TO THE PERTINENT E.S.D. REQUIREMENTS

FIELD ENGINEER

*C. Craig* 7-6-84

FIELD QC INSPECTOR

*C. Craig* 7-10-84

CHIEF ENGINEER

*M. Mason* 7-22-84

FIELD QA/QC MANAGER

*C. Craig*

FIELD QA/QC MANAGERS EVALUATION:



APPROVED AS RECOMMENDED



OTHER

☐ NON-CONFORMANCE - D.R.#

COMMENTS:

CAUSE CODE

3

FOR CRAFT STPR'S

CONTROLLED COPY

☒ OTHER THIS DCN

DATE

7/24/84

FIELD QA/QC MANAGER

*C. Craig*

CORRECTIVE ACTION REQUIRED BY:

*ENGR/DE/CRG*

NOT LATER THAN:

*As soon*

STEPS TO PREVENT RECURRENCE:



NOT APPLICABLE

(CRAFT AND QC SUPERVISOR TO ENSURE RESPONSIBLE PERSONNEL ARE INSTRUCTED TO APPLICABLE REQUIREMENTS AND PROCEDURES IN PARTICULAR ESD-201, PARA 3.2, QAI-152, PARA 11.5 & K-FP-10, PARA 10.1.5. E)

DATE

DATE

FIELD QA/QC MANAGER

DATE

DATE

FIELD QA/QC MANAGER

DCN 96-059

2 OF 3  
PLUS ATTACHMENTS

ONE OF THE PLATES WAS MARKED "RR" IN BLUE SPRAY PAINT, A METHOD COMMONLY USED IN AREA 10 FOR DENOTING MATERIALS TO BE USED FOR RUPTURE RESTRAINTS ONLY. ON THE SAME PIECE OF PLATE THE NUMBER 14423 WAS MARKED WITH NISSEN METAL MARKER. THE 14423 MARKING WAS MARKED ON SEVERAL OF THE PLATES IN A MANNER WHICH WOULD NORMALLY INDICATE THAT THE NUMBER WAS DESIGNATING A PURCHASE ORDER NUMBER. I RECOGNIZED 14423 AS A PURCHASE ORDER NUMBER FOR 1" THICK TYPE A-36 CARBON STEEL AS WELL AS TWO OTHER SIZES AND TYPES OF STEEL, NONE OF WHICH WOULD NORMALLY BE USED FOR RUPTURE RESTRAINTS. PLEASE NOTE THE ATTACHED FIELD REQUISITION, PURCHASE ORDER, AND RECEIVING REPORT DOCUMENTS.

THERE WERE NINE PLATES TOTAL AND THEY ARE DESCRIBED AS FOLLOWS:

- 1.) ONE PLATE 1"X16"X4'0"  
MARKINGS — 14423 — CLASS I STANDS — BLUE SPRAY PAINT NEAR CRIS EDGE
- 2.) ONE PLATE 1"X16"X4'0"  
MARKINGS — 14423 (ON THE EDGE) — "RR" IN BLUE SPRAY PAINT
- 3.) FOUR PLATES 1"X16"X16"  
MARKINGS — NONE
- 4.) ONE PLATE 1"X16"X16"  
MARKINGS — 14423 — CLASS I STANDS
- 5.) ONE PLATE 1"X16"X16"  
MARKINGS — 14423 (ON ONE EDGE)
- 6.) ONE PLATE 1"X16"X16"  
MARKINGS — 14423

THE MATERIAL HAD BEEN FRAUDULENTLY MARKED WITH THE 14423 P.O. #. THE MATERIAL SHOULD HAVE BEEN MARKED FOR

DCN 96-059

3043  
PLUS ATTACHMENTS

CLASS E USE ONLY. ESD VIOLATIONS  
INCLUDE 201 3.2 AND 277 5.0 (AS APPLICABLE).  
PLEASE FIND THE NIGHT SHIFT APP CC  
INSPECTOR'S NOTES AS TO HIS KNOWLEDGE  
CONCERNING THIS MATTER.

RCM 1/96

FOR INFORMATION

97

SWING  
6.28.84

CRAIG

CONCERNING plates ON THE FLOOR AT THE NORTH  
END OF FAB SHOP, THAT YOU HAVE A HOLD TAG ON.  
ON SWING 6.27-84 ONE OF THE NEW HIRES WAS  
CUTTING BASE plates FOR: PULLMAN MATERIAL STORAGE AREA  
STANDS. HE LOCATED THE plate IN THE CLASS E STORAGE  
AREA, THE plate HE GOT WAS plate THAT HAD LOST  
TRACEABILITY NO POS HTS STAMPS etc. THE FOREMAN  
HRS HAD A TALK TO HIM AND, TOLD HIM HE SHOULD  
HAVE WRITTEN CONSTRUCTION AID OR SCRAP ON  
THEM, HOPE THIS HELPS YOU <sup>ANY</sup> SO IT DOES NOT  
HAVE TO GO ~~ANY~~ FURTHER

JOHN EDGETON

FOR INFORMATION  
ONLY



INTEROFFICE CORRESPONDENCE

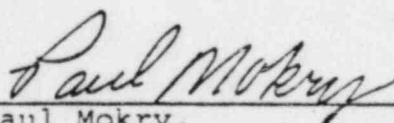
5946

EXHIBIT 3

DATE July 21, 1984  
TO PPP Superintendents  
FROM Paul Mokry  
SUBJECT Craft STPR's on DR 5946

Discuss with your Craft about flow meters and their proper use.  
Cover the information contained on the attached sheet.

After this information has been discussed, the Superintendents  
are to sign the memo and attached training sheet and return to Carolee  
at Trailer 61 or return to Tim Roberts box in the Main Office. Please  
do not return with the daily time sheets as this will cause unnecessary  
delay in the processing of the DCN's and DR's.

  
\_\_\_\_\_  
Paul Mokry,  
General Construction Superintendent

M. Andrews	B. Madron
D. Buhanan	H. Reed
J. Callahan	E. Jorden
J. Rowley	C. Bolinger
C. Borra	B. Parmley
R. Martin	L. Bailes
R. Impastato	
L. Longo	
S. Tucker	
T. Justen	
J. Williams	



5946

TRAINING SHEET

NATURE OF INSTRUCTION: \_\_\_\_\_

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

INSTRUCTOR: \_\_\_\_\_

ATTENDED BY:

1. Steven Mallory
2. Paul Mallory
3. ~~Samuel Mallory~~ 1301
4. ~~John Mallory~~ 1546
5. ~~Edward S. Sledge~~ 2408
6. David Jones 2811
7. L. R. Brown 230
8. L. W. White 261
9. Felix Johnson 1728
10. ~~Robert Brown~~ 2847
11. ~~John Brown~~ 3607
12. ~~John Brown~~ 2158
13. ~~John Brown~~ 2978
14. ~~Robert Brown~~ 2716
15. ~~John Brown~~ 2603
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PG&E GAS & ELECTRICITY  
UTILITY CENTER POWER PRODUCTS

REVIEWED  
*J. E. Miller*

DATE 7/14/84

D.R. No. 5946

Iss. No. 1

Unit No. 1

Code No. 1

Hold Tag 1

Resubmit Tag 1

Inspector MEASURES

PERMIT USE OF FLOWMETERS

PER. CON. 30-088

During weld monitoring, the following conditions were noted:

1. Flowmeters were in use which are not permitted in ESD-213 and ESD-219. These ESDs permit only the Linde L-32 (20 psi inlet type). The following additional devices are in use:
  - A. Linde L-32 (50 psi inlet) - This device is identical to the L-32 (20 psi inlet) except it is designed for an inlet pressure of 50 psi.
  - B. Victor FM 371: This device is similar in appearance to the Linde L-32. It is designed for an inlet pressure of 25 psi.

Continued - Page 2

RECOMMENDED DISPOSITION: INDICATE APPROVAL BY CIRCLING THE APPROPRIATE "RECOMMENDED DISPOSITION"

☒ A) Revise ESD-213 & ESD-219 to permit the use of the additional types of flowmeters.

☒ B) Revise ESD-213 to delete regulator calibration requirements.

☒ A) Withdraw all types of flowmeters from use which are not permitted in ESD-213 and ESD-219.

☒ B) Revise ESD-213 to delete regulator calibration requirements;

APPROVED BY: Mr. J. E. Miller Date 7/14/84

PG&E to disposition. 7/15/84

ACCEPT AS IS: REVISE ESD 213 & 219 AS DIRECTED BY UNIT II DR #8637. (SEE MEMO FROM J. MILLER TO K. MEREITH / C. THOMAS DATED 7.10.84. CLOSE DR UPON SUBMITTAL OF REVISED ESD'S TO PG&E FOR REVIEW & APPROVAL.

Customer Out Date 7-14-84

ALL DISPOSITION: ☒ In Accordance With Above ☐ Other (specification and approval required)

Comments: None Date: 7/14/84

Work Completed: None Date: 7/14/84

EXPLANATION IF NECESSARY: Added statement on page 2 per PG&E request. 7-12-84

Field C.A. Manager None Date 7/14/84 Customer None Date 7/14/84

IS TO PREVENT RECURRENT: ☐ Not Applicable

RAFT QC weld monitoring to be instructed to monitor for flowmeter conformance.

Additional info on work (attached) 7-16-84

Field C.A. Manager Mr. J. E. Miller Date 7/14/84

PREPARED BY: ☒ Master C.A. File ☒ Auth. Insp. ☒ Engineering Dept. ☐ Other

☒ Customer ☐ Receiving ☐ Field Inspector

# ORIGINAL

DR NO. 5946 Page 2  
ISS NO. 1  
UNIT NO. 1  
CODE NO. 1

Pacific Gas & Electric

SPEC. NO.

3711

DATE 5-25-84 Regulation 100-84

Disco Convent

ICS NO.

7177

INSPECTOR: [Signature]

## EXPLANATION OF Discrepancy (Continued from Page 1)

- C. Victor HRF 2325: This is a similar flowmeter with a built-in pressure regulator.
- D. Victor AF 250: This is a regulator with the low pressure gauge graduated in CFH. This device is not a true flowmeter.
- All of the flowmeters will accurately measure gas flow rates provided proper inlet pressures are used. The AF 250 will be accurate if the outflow of gas is not restricted.
2. L-32 and Victor flowmeters were being used with the AF 250 regulator. Neither device will read accurately in this instance. It is impossible to determine the inlet pressure to the L-32 or Victor flowmeter. While the flowmeter will restrict the gas flow from the AF 250, ESD-219 does not permit this combination.
  3. An L-32 (50 psi inlet type) was being used with an inlet pressure of 15 psi. This is a violation of ESD-219. This same flowmeter was set at 15 CFH, a violation of the WPS. The WPS requires 20 CFH.
  4. Regulators were not calibrated as is required in ESD-213.

Added at PG&E request:

The conditions observed occurred on 6-4-84 in Unit II and the Area 10 Fab Shop. (@ Agueda 1-12-84) L.L.E. 7/12/84

1058-070

TO: BEN HANAN EXHIBIT 4

FROM: P. STIEGER

DATE: 7-24-84

THIS DCN/DR is issued for your STEPS TO PREVENT RECURRENCE only. Do NOT use this document to perform any work. Use attached training record form to document STEPS.

DCN/DR must be completed promptly and correctly with adequate documentation. Return to me by ASAP - Tim Roberts  
Box in m.o.

*train cee area 10*  
*fab shop Personnel*

*Paul L. Steiger*

6.	_____	26.	_____
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8.	_____	28.	_____
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12.	_____	32.	_____
13.	_____	33.	_____
14.	_____	34.	_____
15.	_____	35.	NOT APPLICABLE
16.	_____	36.	_____
17.	_____	37.	_____
18.	_____	38.	_____
19.	_____	39.	_____
20.	_____	40.	_____

DEFICIENT CONDITION CLOSED:

DATE:

SIGNATURE:



1058-070

TRAINING SHEET

NATURE OF INSTRUCTION: ESD 243 PAR 5.2

DATE: 7-24-84

TIME: \_\_\_\_\_

INSTRUCTOR: \_\_\_\_\_

Buckanan

ATTENDED BY:

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FOR CRASH DITCH

7/24/84



ORIGINAL

NO TEST PKG.

UNIT # II	AREA CONT	ELEV.. VARIOUS	COL/LINE	DATE: 7-12-84	NOTICE NO. 1058-070
DEFICIENT CONDITION: DURING CUTTING OF CAUSHABLE BUMPERS TO DESIGN LENGTHS PER DC 2-EC-22610 $\Delta$ CRAFT CUT BUMPERS SHORT (REF ATTACHED LIST OF APPLICABLE RESTRAINTS AND ACTUAL CUT LENGTHS). NOTE: DG #2240 DATED 6-27-84 ADDRESSED THIS PROBLEM AND PGFE EVALUATION STATED THAT THE SHORT LENGTHS WERE ACCEPTABLE.					
HOLD TAG APPLIED: NO				TAG # N/A	INITIALS N/A DATE N/A
RECOMMENDED DISPOSITION: TCR ① ACCEPT AS IS PER DG #2240 DATED 6/27/84 (OR) PGFE EVALUATION WAS ACCEPTABLE. 2. PGFE TO DISPOSITION				ORIGINATOR'S SIGNATURE: <i>[Signature]</i>	
				FIELD ENGINEER <i>[Signature]</i>	
				FIELD/QC INSPECTOR <i>[Signature]</i>	
				CHIEF ENGINEER S.K. Todd C. Ray 7/3/84	
				LEVEL III <i>[Signature]</i>	
				FIELD QA/QC MANAGER <i>[Signature]</i>	
FIELD QA/QC MANAGERS EVALUATION: <input type="checkbox"/> APPROVED AS RECOMMENDED <input type="checkbox"/> OTHER					
<input type="checkbox"/> NON-CONFORMANCE - D.R.# _____ <input type="checkbox"/> REPAIR ORDER <input type="checkbox"/> REWORK/REINSPECT <input type="checkbox"/> INTERNAL AUDIT <input checked="" type="checkbox"/> OTHER THIS DCN			COMMENTS:  <b>CONTROLLED COPY</b>  DATE 7/20/84 FIELD QA/QC MANAGER <i>[Signature]</i>		
CORRECTIVE ACTION REQUIRED BY:			NOT LATER THAN:		
STEPS TO PREVENT RECURRENCE: <input type="checkbox"/> NOT APPLICABLE CRAFT SUPERVISOR TO ASSURE RESPONSIBLE PERSONNEL ARE INSTRUCTED TO APPLICABLE REQUIREMENTS AND PROCEDURES, IN PARTICULAR ESD-243 PARA 5.2 3/1004 <b>FOR CRAFT STPR'S</b>					
RESPONSIBLE SUPERVISOR			DATE 7/20/84		FIELD QA/QC MANAGER <i>[Signature]</i>
DEFICIENT CONDITION CLOSED:			DATE		SIGNATURE:

# CRUSHABLE BUMPERS

CUT SHORT

DC-2-EC-22616  $\Delta$

RESTRAINT	BUMPER	DESIGN LENGTH	CUT LENGTH
2-1 RR	E	$8\frac{5}{16}"$	$8\frac{1}{8}"$
5-11 RR	A	$6\frac{3}{8}"$	$6\frac{3}{16}"$
6-1 RR	C	$6\frac{1}{4}"$	$6\frac{1}{8}"$
6-1 RR	E	$9\frac{3}{16}"$	$9\frac{1}{16}"$
2046-ERT	7	$3\frac{9}{16}"$	$3\frac{1}{2}"$

78

AFFIDAVIT

My name is Timothy J. O'Neill. I am submitting this statement freely and voluntarily to Mr. Thomas Devine, who is my counsel for disclosures to the U.S. Nuclear Regulatory Commission (NRC). This affidavit is to rebut false statements by Pacific Gas and Electric Company (PG&E) and the Bechtel Corporation in response to my July 27, 1984 affidavit and petition under 10 CFR 2.206 regarding the Diablo Canyon Nuclear Power Plant. Although the statements by PG&E/Bechtel defenses may not have been false statements to the government, they were made in a public forum and these false statements to the public should become part of the record for licensing. Confidence in the public statements of the utility is of paramount importance in the event of any type of accident, therefore the public must be able to rely on the utility to tell the truth. This statement also is to offer my consent for Mr. James McDermott to join me as a co-petitioner in my July 27, 1984 filing with the NRC.

I. WELDED STUDS

1. On Friday, June 27, 1984, Bechtel representative Howard Friend asserted that management has investigated the issue of ASTM A-307 bolts used as welded studs "ad nauseum". (See July 28, 1984 Sar Francisco Chronicle article, enclosed as Exhibit 1). To date, I have not received a documented response as to the acceptability of this material for the intended application. In January, 1984, when I

first reported this issue on-site in a quality-assurance (QA) Discrepancy Report (DR), Pullman Power Products QA/QC Manager Harold Karner censored the report to delete any references to ASTM A-307 material. He did not refute my findings or defend his decision on the record. Instead of investigating the problem, in this case the problem vanished. My original DR and the censored version by Pullman are included as Exhibits 2 and 3, respectively.

2. On Friday, July 27, 1984, Mr. Friend also said the site engineers agreed that there was no substance to my complaints. This conflicts with a May 31, 1984 internal Pullman memorandum by Harold Karner, which stated that the use of A-307 bolts with the heads cut off as welded studs was NOT (emphasis in original) acceptable. This memo was issued in response to yet another discrepancy report written over the use of improper materials as welded studs. The May 31, 1984 memorandum is enclosed as Exhibit 4. One of the individuals that participated in writing the memo was Chris Neary, Pullman's corporate welding engineer. In a July 5, 1984, affidavit to the Atomic Safety and Licensing Appeals Board (Exhibit 5), Karner again changed his story and said there was no technical basis for his May 31, 1984 memorandum. The technical basis was summarized in my report of January 13, 1984, as the use of this material is not permitted without a welding procedure qual-




ification test performed. Furthermore, Exhibit 6 is included to show current requirements for weldable A-307 bolt materials. Note the supplemental section for weldable bolt materials, and the restrictions on these materials as compared to chemistry and QA requirements for general bolt grade material. The additional requirements are in agreement with sound welding engineering fundamentals.

3. On July 27, 1984, Mr. Friend also asserted that the NRC had agreed with Bechtel and PG&E over this issue. If that was true, why did the Atomic Safety and Licensing Appeals Board hold up the licensing decision on July 6, 1984, until this issue was resolved? (See the Appeal's Board decision, enclosed as Exhibit 7, at pages 10-11.)

## II. PG&E RESPONSES TO MY CONCERNS

4. In the Los Angeles Times, a PG&E spokesperson stated that the company has "bent over backwards for this guy. We have had meetings with him to be sure we understood his concerns". (The Times article is included as Exhibit 3) Although PG&E did meet with me, the context of these meetings was not constructive discussion and understanding. For example, in a July, 1984 meeting with PG&E QC Supervisor Ron Hobgood, the discussion turned into an attack by Hobgood on my qualifications to question PG&E. This meeting was called to discuss my complaints of harassment



REPORTED TO PG&E   
by Pullman QC management<sup>A</sup> via the Quality Hotline, which Hobgood supervises. This harassment complaint was in reference to an insubordination warning notice I received on June 30, 1984 for questioning discrepancy reporting priority. Hobgood stated he was consulted prior to the warning being issued by Pullman, and now the man was investigating my complaints of harassment. This seems to me to be a direct conflict of interest, and thus explains the position taken by Hobgood throughout the meeting. Hobgood used words such as inflexible, uncooperative, and unreasonable to describe me as an employee. His comments could hardly be taken in a spirit of cooperativeness. At one point, in reference to a letter I wrote over scrapping perfectly good material, I was asked in a demeaning tone, "How does it feel to be the eyes and ears of the public?" In a meeting on June 12, 1984 with PG&E special projects engineer D. Rockwell, I voiced my concerns over an operation where I thought no procedure existed. I was given a procedure with a revision date of June 5, 1984, and told that this procedure covered the condition identified in late February. The prior revision of the procedure showed that it did not. In my dealings with PG&E, the Quality Hotline person on duty made a valid attempt to move the concerns up the managerial ladder, however the higher they got, the more uncooperative and hostile PG&E became.

5. In the Los Angeles Times, PG&E also said they had investigated my concerns and that they were wrong. A good

example of their "investigative findings" is the previously-stated meeting with D. Rockwell on June 12, 1984. PG&E's answer to my reports of drilling without procedures for pipe support layout was to tell me that the operation was controlled by procedure. Unfortunately, the revision date on the procedure was five days prior to the meeting, and approximately four months after the report on uncontrolled drilling. This is included as Exhibit 9. In this meeting I also questioned the installation of expansion anchors in place of grout designed to fill voids in concrete. PG&E stated they would investigate and respond at a later time. When I asked that they respond in writing, this was termed a "demand" in Mr. Rockwell's June 14, 1984 affidavit written as a result of the meeting and previously submitted before the Board. I do not feel a written reply is an unreasonable request, although PG&E has yet to supply anything but a verbal response that "there are no problems".

6. In the Los Angeles Times, PG&E stated that I was never discouraged from writing QA reports. That is a grossly false statement. I was discouraged from writing reports so many times that I lost count. This was a Pullman QC management directive, that work in-process did not require a report if deficiencies were noted, however this directive directly conflicted with the written procedure for such reporting that stated a report was required. I was reprimanded by both Pullman and PG&E for not realizing the "intent" of the

written procedures. I cannot work to intent, I can only work to the letter of a written procedure.

### III. HARASSMENT

7. In the San Luis Obispo Telegram-Tribune, PG&E said I was hit with water from a paper drinking cup, rather than from a fire extinguisher. This article is enclosed as Exhibit 10. Information that I received confirms this as a direct lie, and demonstrates that PG&E's only intent is to cover up instances of harassment, rather than stop them. It is interesting that this explanation was not offered until I went public with my petition. If their story were true, why didn't they explain it to me at the time, rather than xeroxing my letter describing the act as harassment and distributing it to the construction workers involved? If anything at Diablo Canyon has become ad nauseum, it is PG&E's denials that there are any problems.

I have read the above 6 page affidavit, and it is true, accurate, and complete to the best of my knowledge and belief.

Timothy J. O'Neill



## Surprise Debate Over Diablo Canyon

By Charles Petit  
Science Correspondent

Pacific Gas & Electric Co. officials and a Bechtel engineer made a surprise, angry appearance yesterday at a press conference called by a "whistle-blower" inspector who quit at the Diablo Canyon nuclear plant Tuesday.

They showed up to present a rebuttal to charges made by Timothy J. O'Neill, 27, an inspector who worked for a subcontractor installing piping mounts in the \$4.9 billion plant until he resigned.

The utility officials told reporters gathered to hear O'Neill's case at the San Francisco Press Club that they have already reviewed "ad nauseam" his charges of substandard construction.

The charges, coming less than a week before the Nuclear Regulatory Commission is scheduled to decide whether the plant may be turned up to full power, are "old news," the utility officials said.

They said the charges are part of a broad strategy by nuclear foes to "slow down and stop the industry" by any means. One PG&E representative said legal interveners against nuclear plants have turned last minute allegations into a "near art form."

Richard Davin, a PG&E public information officer, said his company decided to show up at the anti-nuclear press conference because "we're frankly getting just a little



**TIMOTHY J. O'NEILL**  
He said the plant is unsafe

tired of this, and we're not going to take it on the chin any more without responding."

The utility officials sat in the back row while O'Neill, flanked by lawyers for a Washington-based anti-nuclear activist organization, the Government Accountability Project, detailed charges that PG&E workers harassed him while on the job and frustrated his efforts to report substandard workmanship.

The Government Accountability Project has used O'Neill's charges to support a petition asking the Nuclear Regulatory Commission to delay a decision, expected Thursday, on whether to give the troubled



**BECHTEL'S HOWARD FRIEND**  
He dismissed O'Neill's charges

plant a final license to operate at full power.

O'Neill, until Tuesday an employee of Pullman Power Products Co., said workers at the plant earlier this year sprayed him with a fire extinguisher, and that he heard workmen tell each other that a ".44 magnum to the back" — an apparent reference to a handgun — would end his complaints.

The company, he added, "did not take adequate steps to inform all workers that harassment of inspectors is a violation of federal law."

O'Neill, who admits he has a

reputation as a "nitpicker," said that "I have a policy of holding them (workmen) to the letter of a procedure."

He said that his previous experience overseeing manufacture of components used in the Navy's nuclear-powered ships "taught me that you do it by the book, or you're fired," and he said similar high standards "just aren't enforced at Diablo Canyon."

The Government Accountability Project petition based on his charges alleges 14 specific instances where proper procedures were not followed.

O'Neill said that one of the most serious is use of threaded steel studs to anchor emergency water spray pipes in the reactor containment building. The studs, he said, were welded from bolts not authorized for such use and might be too brittle to withstand earthquake stress.

Howard Friend, a Bechtel industries completion manager for Diablo Canyon, dismissed O'Neill's charges.

"The stud problem has been investigated ad nauseam by PG&E, by our metallurgists and our engineers, and the NRC has reviewed everything we have done and agrees." He said flatly, "there is nothing substantive about these complaints."

He added, "If anybody thinks that PG&E would spend the amount of money that we have on this plant, and then would shortchange on bolts — well, it just doesn't make sense."

Steven Skidmore, the PG&E manager for quality assurance in nuclear operation, also said that O'Neill had not exhausted in-house channels for making his reservations known. The complaints, after lower-level PG&E managers had rejected them, could have been taken higher up "but Mr. O'Neill did not do that."

The water-dousing incident had also been investigated, and PG&E claimed it was just "horseplay" in which O'Neill was not a target and was accidentally splashed.

If the attempts by plant opponents do not succeed in delaying the permit decision, or in getting an appeals court order blocking the permit, Diablo Canyon electricity could begin flowing to Pacific Gas and Electric Co. customers by the end of August.

And, within two to three months, the steady buildup of power from the reactor's core could be complete, with the plant generating its full 1084-megawatt capacity.

PG&E — which has been bedeviled by nuclear power critics, discovery of a nearby active earthquake fault and a diagram fiasco during construction — filed its first permit request for the plant nearly 18 years ago.



10 CFR-21  
(SI) or (S) NOT  
ATTACHED



# Pullman Power Products

## DISCREPANCY REPORT

D.R. No. \_\_\_\_\_  
Iss. No. \_\_\_\_\_  
Unit No. ONE AND TWO  
Code No. \_\_\_\_\_  
Hold Tag X  
(yes) (no)

CUSTOMER Pacific Gas & Electric SPEC. NO. ET-1 DATE JANUARY 13, 1984  
PROJECT Diablo Canyon JOB NO. 11 INSPECTOR O'NEILL

DISCREPANT ITEM: NONCONFORMANCE TO ASME IX-77 AND AWS D1.1-82 MATERIAL AND PROCEDURE REQUIREMENTS FOR WELDED STUDS.

EXPLANATION OF DISCREPANCY: WHILE RESEARCHING WAREHOUSE COPIES OF FIELD WAREHOUSE REQUISITIONS FOR PIPING QA, INSPECTOR BECAME AWARE OF THE FOLLOWING NONCONFORMANCES TO ASME IX-77 AND AWS D1.1-82 FOR WELDING STUDS TO THE CONTAINMENT LINERS (SYSTEM 12), AND UPON FURTHER RESEARCH FOR WELDED STUDS IN GENERAL USING ASTM A-325, A-307, AND A-108 ATTACHMENTS.

ASTM A-325, A-307, AND A-108 ARE WELDED IN A MANNER THAT DEVIATES FROM THE ABOVE-REFERENCED CODES AND PG&E APPROVED WELDING PROCEDURES 7/8 AND 203. THESE PROCEDURES ARE QUALIFIED TO WELD P1 MATERIAL TO P1 MATERIAL IN ACCORDANCE WITH ASME IX-77. ASTM A-325, A-307 AND A-108 ARE NOT REFERENCED IN ASME IX-77 AS P1 MATERIALS, THEREFORE WELDING OF THESE MATERIALS REQUIRES A QUALIFIED WELDING PROCEDURE PRIOR TO FABRICATION. PULLMAN POWER PRODUCTS HAS NO

### RECOMMENDED DISPOSITION:

INDICATE APPROVAL: ☐ DISAPPROVE THE RECOMMENDED DISPOSITION

- 1) REWORK
- 2) REPAIR
- 3) REJECT
- 4) USE AS IS (ACCEPT AS IS)

EXHIBIT 2

Approved By: P. P. 7 Field QA Mgr. Date: \_\_\_\_\_ Customer: \_\_\_\_\_ Date: \_\_\_\_\_

Final Disposition: ☐ In Accordance With Above

☐ Other explanation and approval required

Work Completed: Insd. Date: \_\_\_\_\_

Work Completed: Asst. Date: \_\_\_\_\_

Explanation if necessary:

Field QA Mgr. Date: \_\_\_\_\_ Customer: \_\_\_\_\_ Date: \_\_\_\_\_

Approved for Release: ☐ Not Approved

Customer: PG&E ☐ Field QA Mgr. ☐ Receiving ☐ Shipping ☐ Other: \_\_\_\_\_  
Inspector: O'NEILL ☐ Field Inspector

Explanation if necessary:



NONCONFORMANCE TO ASME IX-77 AND  
AWS D1.1-82 MATERIAL AND PROCEDURE  
REQUIREMENTS FOR WELDED STUDS.


DR # \_\_\_\_\_

INSP: C. NEILL

DATE: JANUARY 13, 1984

PAGE 2

WELDING PROCEDURE QUALIFIED IN ACCORDANCE WITH ASME IX-  
TO WELD A-325, A-307, AND A-108 ATTACHMENTS TO P1 MATERIALS

IN CASES WHERE WELDING IS REFERENCED TO AWS D1.1-82  
PREQUALIFIED WELDING PROCEDURES THE ABOVE-REFERENCED MAT-  
ERIALS ARE NONCONFORMING AS A-325, A-307, AND A-108 ARE NOT LIST-  
ED AS PREQUALIFIED MATERIALS PER ANY EDITION OF AWS D1.1 STRUCT-  
URAL WELDING CODE, SECTION 8.2.1 OR 9.2.1. IN ADDITION, THE  
USE OF EXISTING ASME IX-77 QUALIFIED WELDING PROCEDURE SPEC-  
IFICATIONS 7/8 AND 203 DO NOT ADEQUATELY MEET THE REQUIRE-  
MENTS FOR AWS PREQUALIFIED WELDING PROCEDURE SPECIFICATIONS  
REFERENCED IN D1.1-82 5.1.2 AND 2.9.1 B-55a AS THESE WELDING PROC-  
EDURE SPECIFICATIONS HAVE NO APPROVAL TO ALLOW TWO-SIDED WELDING  
USING THE FOLLOWING SYMBOL . IN ADDITION TO THIS, THE JOINT  
TOLERANCE FOR BEVEL ANGLE OF  $45^{\circ} + 25^{\circ} - 5^{\circ}$  IS NONCONFORMING TO  
THE PREQUALIFIED D1.1-82 2.9.1 B-55a REQUIREMENTS.

ASTM A-307, BY SPECIFICATION, HAS NO CHEMISTRY LIMITATION FOR  
CARBON AND NO REQUIREMENT FOR HEAT TRACEABILITY; THEREFORE  
JOINTS MADE WITH REFERENCED PROCEDURES USING A-307 FASTENERS  
ARE INDETERMINATE AS TO WELD QUALITY. A-307 STATES THAT WHEN  
PURCHASED FOR WELDED APPLICATIONS, A-36 MATERIAL MUST BE SPEC-  
IFIED. P.O. RESEARCH FOR THIS MATERIAL SHOWS NO SUCH SPECIFICATION.

A-325 MATERIAL IS, BY SPECIFICATION, A HIGH-STRENGTH FASTENER  
AND THE ALLOWABLE CARBON IN THIS MATERIAL WARRANTS SPECIAL  
WELDING CONSIDERATIONS SUCH AS PREHEAT AND PWHT TO ENSURE  
NOTCH TOUGHNESS IN THE FINAL WELDED JOINT. FURTHER INVESTIGATION  
WILL SHOW, IN SOME CASES, THAT A-325 AND A-307 BOLTS ARE USED TO  
FABRICATE WELD STUDS BY CUTTING THE HEAD OFF THE BOLT. ALL IN-  
STALLATIONS OF THIS TYPE ARE QUALITY INDETERMINATE AS THE MATERIAL  
WAS PURCHASED FOR AN APPLICATION OTHER THAN WELDING.

ASTM A-108 MATERIAL IS ESSENTIALLY OF P1 CHEMISTRY, HOWEVER THIS  
DOES NOT PRECLUDE THE REQUIREMENT FOR PROCEDURE QUALIFICATION  
AS APPLICABLE TO ASME IX-77 OR AWS D1.1-82.

THE ATTACHED COPIES OF FIELD WAREHOUSE REQUISITIONS DOCUMENT  
THE USE OF THESE NONCONFORMING MATERIALS ON COMPONENT SUPPORTS  
FOR SYSTEMS 14 (COMPONENT COOLING WATER), 12 (CONTAINMENT SPRAY), 10  
(RESIDUAL HEAT REMOVAL), 09 (SAFETY INJECTION SYSTEM), 08 (CHEMICAL AND  
VOLUME CONTROL), AND 07 (REACTOR COOLANT) IN BOTH UNIT ONE AND  
UNIT TWO. THESE EXAMPLES ARE TO BE CONSIDERED TYPICAL, AND  
A THOROUGH EVALUATION OF ALL SUPPORTS MAY BE NECESSARY TO DETER-  
MINE ALL LOCATIONS WHERE THE ABOVE NOTED NONCONFORMING MATERIALS  
AND PROCEDURES WERE USED.

SIGNED: Timothy A. O'Neill 1/13/84

## FIELD WAREHOUSE REQUISITION

ITEM 1-14 LINE SPEC. 1-K2 DATE 3-2-83  
NO. NA DETAIL DWG. NO. 249266 DDR. NO. NA ACT. NO. 7177 PAGE NO.      OF     

[illegible]

Food's area 140 *John L. Reed*  
GIVER TO AREA FOREMEN  
FO. BY *Vidmar*  
APPROVAL *John L. Reed*

*RR Hassler 1078*  
Q APPROVED  
*St. Alban #439*  
FILLED BY

WHITE COPY — Q.A

CANARY COPY - WAREHOUSE

PINK COPY — FIELD ENGINEERING

Division of Pullman Incorporated

## FIELD WAREHOUSE REQUISITION

FORM 1-10 LINE SPEC. 1-K2 DATE 7-7-83  
NO. NA DETAIL DWG. NO. 049266 DDR. NO. NA ACT. NO. 7177 PAGE NO. OF

QTY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
6	6	5/8" Ø X 2" Long Threaded welding Stud A 325 C.S.	6942	B	
-		Issued 5/8" X 2 3/4" Lg Bolt A-325 → <i>[Signature]</i>			
		CLASS 1 HNG STDN-1C			
		TW DIA			

24-1000-100 *Robert Reed*  
 VER TO AREA *Kidnapper's* FOREMEN  
 D. BY *Nahua F. Lopez*  
 APPROVAL *[Signature]*  
*Fred Brown* 3-7-93  
 G. A. APPROVED  
*[Signature]*  
 FILED BY *[Signature]*

WHITE COPY - C.A.

CANARY COPY - WAREHOUSE

PINK COPY -- FIELD ENGINEERING

17 - 4-10' Area Road to the [unclear]  
 DELIVER TO AREA *Don Gibson* FOREMEN  
 GARY *L. C. CROOK*  
 IG APPROVAL

*Fred Lawer* 3-29-95  
 Q A APPROVED  
*W. B. [unclear]* 1139  
 FILLED BY

**Pullman Power Products**  
Division of Pullman Incorporated  
**FIELD WAREHOUSE REQUISITION**

[illegible]

Final Report 3-17-83  
Q A APPROVED  
[Signature]  
FILLED BY

PINK COPY - FIELD ENGINEERING



STEM 1-11 LINE SPEC. 1-K2-23 128 DATE 5-26-85  
 NO 049255 DETAIL DWG. NO. 500043 DDR. NO. ACT. NO. 7177 PAGE NO. 1 OF 1

$$\frac{59 \text{ N}}{3 \text{ s}}$$

STEM 17 LINE SPEC. 1-K 2 320-12 15 DATE 3-21-83  
DETAIL  
NO. NA DWG. NO. 045266 DDR. NO. NA ACT. NO. 7177 PAGE NO. 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
10	10	5/8" x 1/2" Nelson Weld Studs threaded S/S A307 Gr B	9185	A	
10	10	5/8" x 6A/fts. A194 2ft.	10906	R	
10	10	5/8" x Washer = A325	11716	C	
CLASS I. iter.					

LIVER TO AREA Marshall  
K.P.H. FOREMEN 1655  
CD. BY Indi A. Fleckman 2/21/83  
G. APPROVAL 10001/3/21  
Don Bice 3-21-73  
Q. A. APPROVED  
FILLED BY

WHITE COPY - Q.A

CANARY COPY - WAREHOUSE

PINK COPY — FIELD ENGINEERING

8.2 (05-78) :

## Pullman Power Products

## FIELD WAREHOUSE REQUISITION

ITEM 17 LINE SPEC. 1-152 - 320 - 12 DATE 3-21-83  
 NO. n/a DETAIL \_\_\_\_\_ DWG. NO. \_\_\_\_\_ DDR. NO. \_\_\_\_\_ ACT. NO. 7177 PAGE NO. \_\_\_\_\_ OF \_\_\_\_\_

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
10	(10) 3/21/68	Sgt Nelson Wild Sds threaded C/S A20743	9135	A	
10	10 -	5/8" Nuts A-194-2H.	12906	B	
10	10 -	5/8" Washers A325	11716	C	
Class I. War.					

LIVER TO AREA	Michael	Don Rice 3-2-63
CD BY	FOREMEN 1/2/63	Q A. APPROVED
G APPROVAL	1/2/63	3-2-63

8.2 (05-78)

Pullman Power Products

212/91 12: #3

## FIELD WAREHOUSE REQUISITION

STEM 07 LINE SPEC 56-63-1 DATE 6-1-83  
 NO N/A DETAIL DWG. NO 502730 DDR. NO — ACT. NO 7177 PAGE NO — OF —

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
4	4	1/2" Ø X 1 1/2" WELD STUDS A307 grade B CS	H553	A	
4	4	HEX NUTS 1/2" Ø CS. A194-2H	11906	A	
2	10	LOCK NUTS 1/2" Ø HEX CS. A194 2H			

CLASS I HANGER MATL

140' TUBS W/SIDE  
 ER TO AREA  
 CD BY  
 G. APPROVAL  
 Q. A. APPROVED  
 FILLED BY

WHITE COPY — Q.A.

CANARY COPY — WAREHOUSE

PINK COPY — FIELD ENGINEERING

8.2 (05-78)

Pullman Power Products

## FIELD WAREHOUSE REQUISITION

STEM 214 LINE SPEC 2-KM-2313-3 IC DATE 6-2-83  
 NO — DETAIL DWG. NO 251394 DDR. NO — ACT. NO 7177 PAGE NO 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
4	4	5/8" Ø 2 1/2" LONG THREADED WELDING STUD	9185	A	
4	4	5/8" HEAVY NUT A-194 2H	11024	E	
4	4	5/8" WASHERS A-325	111716	C	

CLASS I HANGER

DELIVER TO AREA  
 ER BY  
 NG APPROVAL  
 FOREMEN  
 Q. A. APPROVED  
 FILLED BY



8.2 (05-78)

Pullman Power Products

CONT I

176

1384

## FIELD WAREHOUSE REQUISITION

ITEM

1-12

LINE SPEC.

1-33-270-10-13

DATE

6-3-83

500176

DETAIL

DWG. NO.

SK-176-1384

DDR. NO.

ACT. NO.

7177

PAGE NO.

OF

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
6	6	1/2" $\phi$ Threaded Welding STUDS 2 1/2" Lg	12991	13	
	1	Nelson STUDSA-108			
6	6	1/2" Hex NUTS CS A194 2H	11906	A	
6	0	1/2" 1/2 Hex NUTS CS A194-2H			
		Class I Hanger Material			

LIVER TO AREA

FOREMEN

Q. A. APPROVED

C. B.

G. APPROVAL

MIKE THURMAN

FILLED BY

WHITE COPY - Q.A.

CANARY COPY - WAREHOUSE

PINK COPY - FIELD ENGINEERING

8.2 (05-78)

Pullman Power Products

Priority 5/32R

## FIELD WAREHOUSE REQUISITION

ITEM

9

LINE SPEC.

2-56-255-10 SFL

DATE

6-6-83

C. NO.

5/32R

DETAIL

DWG. NO.

057349

DDR. NO.

ACT. NO.

7177

PAGE NO.

OF

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
6	6	7/8" X 0' 3" Lg. Threaded Welding stud, with Hex nuts	9287	B	
		Manuf. from A307 Gr. B Mat			
		Class I Hanger			

LIVER TO AREA

FOREMEN

Q. A. APPROVED

C. B.

G. APPROVAL

FILLED BY



609/13  
COLD  
HYDRO. HGR. 34

HYDRO HGR. PA.

SYSTEM 7-09

LINE SPEC. 2-56-1793-12

DATE 6/6/83

NO 2

## DETAIL

DWG. NO. 051409

DDR. NO

ACT. NO.

7177

PAGE NO. 7 OF 10

CLASS I HGR  
~~CLASS A~~

Don Bice 6-7-83  
Q. A. APPROVED  
H. Swenson 6-7-83  
FILLED BY

PINK COPY — FIELD ENGINEERING

2418  
3.2 (05-78)

Pullman Power Products

CONT II

2199-27

FIELD WAREHOUSE REQUISITION

ITEM 2-08 LINE SPEC. S2-1425-3 DATE 6-8-83  
NO. N.A. DETAIL DWG. NO. 2199-27 ODR. NO. N.A. ACT. NO. 7177 PAGE NO. 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
3-(2)		1/2" X 1" WELDED STUDS	10651	A	
		C.S. A 307 GRADE B			
		ISSUED 1/2" X 1 1/2"			
		CLASS F HANGER			
		2199-27			

2-140  
LIVER TO AREA  
CD BY  
G. APPROVAL  
FOREMAN  
Q. A. APPROVED  
FILLED BY

WHITE COPY - Q.A.

CANARY COPY - WAREHOUSE

PINK COPY - FIELD ENGINEERING

3.2 (05-78)

Pullman Power Products

FIELD WAREHOUSE REQUISITION

ITEM 8 LINE SPEC. 2-36-246-3 DATE 6-8-83  
NO. DWG. NO. 051353 ODR. NO. ACT. NO. 7177 PAGE NO. 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
2	0	5/8" X 1 3/4" LG THREADED WELDING STUD <del>W/HEX HEAD</del> A 307 GRADE B			
2	2	3" $\phi$ PIPE CLAMPS FIG 212	1386	B	
		CLASS I HGR			

LIVER TO AREA  
CD BY  
G. APPROVAL  
FOREMAN  
Q. A. APPROVED  
FILLED BY

# Pullman Power Products

CONT  
HGR # 78/292SL

8.2 (05-78)

## FIELD WAREHOUSE REQUISITION

STEM 07 LINE SPEC 56-41-1 DATE 6-9-83  
 DETAIL DWG. NO. 78/292SL DDR. NO. — ACT. NO. 7177 PAGE NO. 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
3 (6)		1/2" P x 1 1/2" LG WELD STUDS	10651	A	
		CS A307 GR B			
		CLASS I HGR. MATL			
		HGR # 78-292SL			

DELIVER TO AREA 140'-0' FOREMAN [Signature]  
 Q.A. APPROVED [Signature]  
 FILLER BY [Signature]  
 WHITE COPY — Q.A. CANARY COPY — WAREHOUSE PINK COPY — FIELD ENGINEERING

# Pullman Power Products

CONT. I 78/125R

8.2 (05-78)

## FIELD WAREHOUSE REQUISITION

STEM 1-12 LINE SPEC 1-53-270-10-B DATE 6-8-83  
 DETAIL DWG. NO. 500176 DDR. NO. 36176-125R ACT. NO. 7177 PAGE NO. — OF —

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
45	13	Nelson Weld Studs 3 1/2" Lg A108	12491	A	

Class I Hanger Material

DELIVER TO AREA [Signature] FOREMAN [Signature]  
 Q.A. APPROVED [Signature]  
 FILLER BY [Signature]  
 DATE 6-9-83



8.2 (05-78)

Pullman Power Products

Cont I

176

## FIELD WAREHOUSE REQUISITION

125P

STEM

1-12

LINE SPEC

1-53-270-10B

DATE

6-9-83

NO

500176

DETAIL

DWG. NO

SK176-125P

DR. NO.

ACT. NO.

7177

PAGE NO.

OF

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
32	32	W-1000 STUOS 1/2" $\phi$ - 3 1/2" Lg	12881	B	
		A307 GRB			
		Class I Hanger Material			

LIVER TO AREA

D. S. Ginn

FOREMEN

Q. A. APPROVED

Don Bice 6-10-83

CD BY

G. APPROVAL

Doug Peck

FILLED BY

J. L. Ginn 6-10-83

WHITE COPY - Q.A.

CANARY COPY - WAREHOUSE

PINK COPY - FIELD ENGINEERING

8.2 (05-78)

Pullman Power Products

Cont I

176

## FIELD WAREHOUSE REQUISITION

125P

STEM

1-12

LINE SPEC

1-53-270-10B

DATE

6-9-83

NO

500176

DETAIL

DWG. NO

SK176-125P

DR. NO.

ACT. NO.

7177

PAGE NO.

OF

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
45	45	1/2" FLAT WASHER CS A325	11716	B	
45	45	Heavy Hex Nut 1/2" CS A19A2H	11932	K	
45	0	1/2" <del>lock</del> NUTS CS A19A2H			
		Class I Hanger Material			

LIVER TO AREA

D. S. Ginn

FOREMEN

Q. A. APPROVED

Don Bice 6-9-83

CD BY

G. APPROVAL

Doug Peck

FILLED BY

J. L. Ginn 6-9-83

WHITE COPY - Q.A.



3.2 (05-78)

## Pullman Power Products

## FIELD WAREHOUSE REQUISITION

ITEM 12 CS LINE SPEC Cont liner Weld Studs DATE 6-9-83  
 NO 501520 DETAIL DWG NO NA DOR NO NA ACT NO 7177 PAGE NO 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
100	100	1/2" X 2 1/2" NELSON STUDS	12491	B	
		GR 1010 - A108			
50	50	1/2" X 3 1/2" NELSON STUDS	12887	B	
		GR 1010 - A108			
TO BE STORED IN CLASS 1 STORAGE					
CONT. #2 DOME BAD ROOM					

VERIFIED Don Bice 6-9-83  
 DELIVER TO AREA FOREMEN Q.A. APPROVED 71 6-9-83  
 C.D. BY Thomas M. Moore  
 G. APPROVAL 71 FILLED BY 71  
 WHITE COPY - Q.A. CANARY COPY - WAREHOUSE PINK COPY - FIELD ENGINEERING

8.2 (05-78)

## Pullman Power Products

## FIELD WAREHOUSE REQUISITION

ITEM 2-08 LINE SPEC S2-1485-3/4" DATE 6-9-83  
 NO N/A DETAIL DWG NO 2199-27 DOR NO N/A ACT NO 7177 PAGE NO 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
2(2)	2	1/2" $\phi$ X 1" LG WELDED STUDS			
		CS. A307 GRB			
		ISSUED 1/2" X 1 1/2" L.G. R.I.			
CLASS 1 HGR MATL					
HGR # 2199-27					

VERIFIED 140'-0" FOREMEN Q.A. APPROVED Heiger 6-10-83  
 DELIVER TO AREA FOREMEN  
 C.D. BY A. Moore  
 G. APPROVAL 1111 FILLED BY Rail-fish

PINK COPY — FIELD ENGINEERING

9.2 (05-78)

Pullman Power Products

Hqr # 22-33852

## FIELD WAREHOUSE REQUISITION

 STEM 1-09 LINE SPEC. 56-524-3/4 DATE 7/11/83  
 NO 502156 DETAIL DWG. NO. 502156 DDR. NO. 7177 ACT. NO. 7177 PAGE NO. 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
4	4	1/2" Weld studs 2 3/4 CS A307 GB	12491	B	
		Class I Hanger Mat			

 DELIVER TO AREA Fletcher FOREMEN Mal Hall  
 Q. A. APPROVED Vern Goodenough 7-11-83  
 BY Lucas Hocking FILLED BY R. G. Ackenbach 7-11-83  
 G APPROVAL

WHITE COPY — Q.A.

CANARY COPY — WAREHOUSE

PINK COPY — FIELD ENGINEERING

9.2 (05-78)

Pullman Power Products

Division of Pullman Incorporated

## FIELD WAREHOUSE REQUISITION

 STEM 1-07 LINE SPEC. 1-5-1676-3/4 DATE 8-16-83  
 NO 1700058 DETAIL DWG. NO. 049244 DDR. NO. 7177 ACT. NO. 7177 PAGE NO. 1 OF 1

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
4	4	1/2" X 2 1/2" Weld STUDS C.S.	13447	E	
		A-108-GR 1010/1020			

 DELIVER TO AREA W. H. H. 8-16-83 FOREMEN Mal Hall  
 Q. A. APPROVED R. G. Ackenbach 8-16-83  
 BY W. H. H. 8-16-83 FILLED BY R. G. Ackenbach 8-16-83  
 G APPROVAL S. FOX



146R #  
66/52

## FIELD WAREHOUSE REQUISITION

ITEM 1-10 CONT. LINE SPEC. 56-3094-3/4" EL [A] DATE 7-8-83  
 NO.        DETAIL DWG. NO. 500066 DDR. NO.        ACT NO. 2177 PAGE NO.        OF       

[illegible]

Class I HGR

REF TO AREA

C'D. 6Y

### 3. APPROVAL

Q. A. APPROVED

FILLED BY

WHITE COPY — Q.A.

CANARY COPY - WAREHOUSE

PINK COPY — FIELD ENGINEERING

8.2 (05-78)

## Pullman Power Products

MANGER # 46  
11R

## FIELD WAREHOUSE REQUISITION

STEM \_\_\_\_\_ LINE SPEC. 1-56-3488-35P1 [A] DATE 7/9/83  
 \_\_\_\_\_ DETAIL \_\_\_\_\_  
 J NO. \_\_\_\_\_ DWG. NO. SK-46-118 DOR. NO. \_\_\_\_\_ ACT. NO. 7177 PAGE NO. \_\_\_\_\_ OF \_\_\_\_\_

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
8	8	1/2" Ø, 2" LG. THREADED WELDING	12491	B	
8	8	STUDS W/ HW HEX NUTS & WASHERS	12837	B	
		A-108-1010-1020 (studs) A194 G.24 (nuts) ↑			
		FW# X 407 A			
		CLASS I MATERIAL H <sub>2</sub> O			

# CLASS I MATERIAL

LIVER TO AREA

$$= 270 + I \quad 140.511.$$

62.4

G/AFR/OVAL

FOREMEN

Q. A. APPROVED

Q. A. APPROVED

LONG 7-9-P3

FILLED BY









2199-57

Division of Pullman Incorporated

DATE 8-22-83

TEM 2-08

LINE SPEC. 52-1485- 4

DATE 8-22-83

NO. N.A

## DETAIL

DWG. NO. 502199

DDA NO

N.A

ACT. NO.

7175

PAGE NO

OF

ORDER TO AREA BY APPROVAL	FOREMAN Q.A. APPROVED FILLED BY
WHITE COPY — Q.A.	CANARY COPY — WAREHOUSE
PINK COPY — FIELD ENGINEERING	

## Pullman Power Products

Division of Pullman Incorporated

336/61R

STEM \_\_\_\_\_

LINE SPEC

52-208-3

DATE \_\_\_\_\_

7/7/83

3 NO.

## DETAIL

DWG. NO. E010971

DDA. NO.

336/61R

ACT. NO.

7177

PAGE NO

OF

DELIVER TO AREA	TOMLINSON	Don Bice	7-1-87
BY	FOREMEN	Q. A. APPROVED	
ING APPROVAL	J C Morehouse	71	Iwenum 7-7-83
		FILLED BY	

$$\begin{array}{r} 2730 \\ \hline 91 \end{array}$$

LIVER TO AREA		Q. A. APPROVED	
CD BY		FILLED BY	
G. APPROVAL			

WHITE COPY — Q.A.      CANARY COPY — WAREHOUSE      PINK COPY — FIELD ENGINEERING

70/25 SL  
PRIORITY 30

[illegible]

AIRTEL 41 115° 40' T. Shum T. H. M. 2. 2424  
 COVER TO AREA FOREMEN  
 Q A APPROVED  
 BY: [Signature]  
 DATE: 8-24-83  
 FILED BY: [Signature]  
 (P. 41)





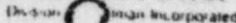
**Pullman Power Products**  
Division of Pullman Incorporated

74-70-38 REV 4/16/79

**FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT**

JOB NO. <b>7177</b>		DATE <b>1-21-81</b>		SHEET NO. <b>1 of 2</b>		SHIPPING ADDRESS: <b>PULLMAN POWER PRODUCTS</b> <b>C/O Pacific Gas &amp; Electric Company</b> <b>Diablo Canyon Power Plant</b> <b>7 Miles North of Avila Beach, CA 93424</b>				REQ. - P.O. - NO. F- <b>7177-9287</b> R.R. -							
DISCOUNT TERMS				SHIPPING TERMS				JOB COST CODE: <b>122</b>				SUBCONTRACT NO.					
VIA						VENDOR: <b>Cardinal Bolt</b> <b>3873 W. Oquendo</b> <b>Las Vegas, Nevada 89118</b>						MAIL 4 COPIES OF INVOICES TO: <b>P.O. Box 367</b> <b>Avila Beach, CA 93424</b>					
ITEM (LETTER)	QTY. REQ/D.	DESCRIPTION								UNIT PRICE		TOTAL		DATE REC'D.	QTY. REC'D.		
A	100	7/8" x 2" Mach. Bolts A307-Gr.B								1 89		189 00					
B	100	7/8" x 3" Mach. Bolts A307-Gr.B								2 26		226 00					
C	300	1/2" x 1 1/4" Mach. Bolt A307-Gr.B								58		174 00					
D	300	1/2" x 1" Mach. Bolt A307-Gr.B								56		168 00					
E	1000	3/8" Ø Heavy Hex Nuts A194-Gr.2H								22		220 00					
NOTE: SEE SPECIAL REQUIREMENTS ATTACHED																	
										TOTAL PRICE		977 00					

NEEDED FOR: <b>Hanger Stock (Wally Franklin)</b>			REMARKS  <b>REIMBURSABLE</b>			RECEIVING DEPARTMENT		
DATE NEEDED:	DATE ORDERED: <b>2-5-81</b>	DATE PROMISED: <b>3-5 Days</b>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <b>REIMBURSABLE</b> </div>			CARRIER:		
DWG(S) ATTACHED:						COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>		
PREPARED BY: <b>R. King</b>	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>				PREPAID: \$ COLLECT: \$		
<b>IMPORTANT: THIS ORDER IS SUBJECT TO ALL THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.</b>						RECEIVED BY:		
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE. MARK ALL SHIPPING TAGS								



RECEIVED BY:

# Pullman Power Products

## PRODUCT ENGINEERING DEPARTMENT

### QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

	Req'd	Approved by Customer	Verified by P.P.P. Q.C.
1. Vendor Quality Assurance Program - ASME Section III			
2. Certified Drawings for Approval			
3. Qualified Procedures for Approval			
a. Welding			
b. Weld Repairs			
c. Heat Treatment			
d. Ultrasonic			
e. Radiograph			
f. Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
4. Documentation			
a. Mill Reports			
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section			
j. NDT Personnel Qualifications			
k. Manufacturers C of C	✓		
5. Marking per P.P.P. Standard			

CARDINAL Bolt  
7177-9287

PREPARED BY Art B. [Signature]  
APPROVED BY [Signature]

DATE OF ISSUE 2/12/41  
PAGE 1 OF 1



Pullman Power Products  
Division of Pullman Incorporated

74-70-20 REV 4/18/70

FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

JOB NO. 7177		DATE 3-29-82		SHEET NO. 1 of 2		SHIPPING ADDRESS: Pullman Power Products c/o Pacific Gas & Electric Co. Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424				REQ. - P.O. - NO. F-7177-10651 R.R. -							
DISCOUNT TERMS				SHIPPING TERMS				JOB COST CODE: 122				SUBCONTRACT NO.					
VIA						VENDOR: Cardinal 3873 W. Oquendo Las Vegas, NEvada 89118				MAIL 4 COPIES OF INVOICES TO: P.O. Box 367 Avila Beach, CA 93424							
ITEM (LETTER)	QTY. REQ'D.	DESCRIPTION						UNIT PRICE		TOTAL		DATE REC'D.		QTY. REC'D.			
A	200	1/2" x 1 1/2" Weld Studs W/1" THD. One End A307 GR. B						1 18		236 00							
		C of C						5 00		5 00							
PLEASE SEE ATTACHED SPECIAL REQUIREMENTS																	
185 9/21/82																	
TOTAL PRICE										241 00							

NEEDED FOR: Hanger Stock				REMARKS				RECEIVING DEPARTMENT			
DATE NEEDED:		DATE ORDERED: 3-29-82		DATE PROMISED: 2 weeks				CARRIER:			
DWG(S) ATTACHED:								COMPLETE <input type="checkbox"/>		PARTIAL <input type="checkbox"/>	
PREPARED BY: R. KING		APPROVED BY: <i>[Signature]</i>		PURCHASED BY: <i>[Signature]</i>				PREPAID: \$		COLLECT: \$	
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.								RECEIVED BY:			
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE. MARK ALL SHIPPING TAGS AND PACKAGES WITH ABOVE ORDER NUMBER.											



## -70-38 810 6/85/70

JOB NO. 7177		DATE 3-29-82		SHEET NO. 2 of 2		SHIPPING ADDRESS: PULLMAN POWER PRODUCTS c/o Pacific Gas & Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424				REQ. - NO. F- 7177- 10651 P.O. - R.R. -					
DISCOUNT TERMS			SHIPPING TERMS			VENDOR:  Cardinal 3873 W. Oquendo Las Vegas, NEvada 89118				JOB COST CODE: 122		SUBCONTRACT NO.			
VIA										MAIL 4 COPIES OF INVOICES TO:					
										P. O. Box 367 Avila Beach, CA 93424					
SPECIAL REQUIREMENTS FOR STRUCTURAL BOLTS OR FASTENERS FOR HANGERS:															
HB1.	Supplier shall furnish three copies of a Manufacturer's Certificate of Compliance signed by manufacturer indicating that materials furnished are in compliance with this Purchase Order, with specifications, or as listed in suppliers or manufacturers catalog.														
HB2.	Certificate of Compliance shall be traceable to our Purchase Order and Item No.														
HB3.	All required documentation shall be sent the day of each shipment to PULLMAN POWER PRODUCTS, P.O. Box 367, Avila Beach, CA 93424 Attn: Q.A. Dept. In addition, a copy shall accompany each shipment.														
HB4.	Any nonconformance to the requirements of the Purchase Order will be considered just cause for return of materials without cost to buyer.														
HB5.	Materials shall be domestically manufactured.														

REMARKS	RECEIVING DEPARTMENT
<u>SOURCE DOCUMENT REQUIREMENTS</u>	CARRIER:
Corp. Appr. Vendor; May Use	
Site Appr. Vendor	
(All) Hanger CLI, G,E, Sprinkler	COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>
Spec M-10	PREPAID: \$ COLLECT: \$
8724 Cardox	RECEIVED BY:



# Pulman Power Products

## PRODUCT ENGINEERING DEPARTMENT

### QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

	REQ'D	APPROVED BY CUSTOMER	VERIFIED BY P.P.P. Q.C.
1. Vendor Quality Assurance Program - ASME Section III			
2. Certified Drawings for Approval			
3. Qualified Procedures for Approval			
a. Welding			
b. Weld Repairs			
c. Heat Treatment			
d. Ultrasonic			
e. Radiograph			
f. Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
4. Documentation			
a. Mill Reports			
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section			
j. NDT Personnel Qualifications			
k. Manufacturers C of C	✓		
5. Marking per P.P.P. Standard			

*Carolina*

PO # 7177-10651

PREPARED BY R. S. King  
APPROVED BY A. J. Harnes 4/7/82

DATE OF ISSUE 4-7-82

PAGE      of

## FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

ITEM (LETTER)		QTY. REQ/D.	DESCRIPTION	UNIT PRICE	TOTAL	DATE REC'D.	QTY. REC'D.
A	300	1/2" x 3 1/2" NELSON STUDS CPL-A-108 Gr. 1010-1020 P.M. 4/25/83	c 191 90	575 70			
B	1000	1/2" x 2 1/2" NELSON STUDS CPL-A108 1010-1020	m 684 90	684 90			
		SEE SPECIAL REQUIREMENTS ATTACHED:					
TOTAL PRICE					1260 60		

NEEDED FOR: CONT. LINER. CLASS 1 HGR. MAT.		
DATE NEEDED: ASAP	DATE ORDERED: 4-27-83	DATE PROMISED: STOCK
DWG(S) ATTACHED:		
PREPARED BY: PAT MALLOY	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.		
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE. MARK ALL SHIPPING TAGS AND PACKAGES WITH ABOVE ORDER NUMBER.		

REMARKS	
REIMBURSABLE	

RECEIVING DEPARTMENT	
CARRIER:	
COMPLETE <input type="checkbox"/>	PARTIAL <input type="checkbox"/>
PREPAID: \$	COLLECT: \$
RECEIVED BY:	



# Pullman Power Products

Division of Pullman Incorporated

## FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

177	DATE 4/23/83	SHEET NO. 2 of 2	SHIPPING ADDRESS: PULLMAN POWER PRODUCTS c/o Pacific Gas & Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424	REQ. - P.O. NO. F- 7177-12491 R.R. -
QUANTITY	SHIPPING TERMS		VENDOR: TWR NELSON DIVISION 2436 Mariondale Ave. Los Angeles, CA 90032	JOB COST CODE: 121 SUBCONTRACT NO.
SPECIAL REQUIREMENTS FOR STRUCTURAL BOLTS OR FASTENERS FOR HANGERS:			MAIL 4 COPIES OF INVOICES TO: P. O. Box 367 Avila Beach, CA 93424	
HB1.	Supplier shall furnish three copies of a Manufacturer's Certificate of Compliance signed by manufacturer indicating that materials furnished are in compliance with this Purchase Order, with specifications, or as listed in suppliers or manufacturers catalog.			
HB2.	Certificate of Compliance shall be traceable to our Purchase Order and Item No.			
HB3.	All required documentation shall be sent the day of each shipment to PULLMAN POWER PRODUCTS, P.O. Box 367, Avila Beach, CA 93424 Attn: Q.A. Dept. In addition, a copy shall accompany each shipment.			
HB4.	Any nonconformance to the requirements of the Purchase Order will be considered just cause for return of materials without cost to buyer.			
HB5.	Materials shall be domestically manufactured.			

NEEDED FOR:			REMARKS		RECEIVING DEPARTMENT	
DATE NEEDED:	DATE ORDERED: 4-27-83	DATE PROMISED:	SOURCE DOCUMENT REQUIREMENTS Corp. Appr. Vendor; May Use Site Appr. Vendor (All) Hanger CLI, G,E, Sprinkler Spec M-10 9724 Cardox		CARRIER:	
Dwg(S) ATTACHED:					COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>	
PREPARED BY:	APPROVED BY:	PURCHASED BY:			PREPAID: 3 COLLECT: 3	
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.					RECEIVED BY:	
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE. MARK ALL SHIPPING TAGS AND PACKAGES WITH ABOVE ORDER NUMBER.						





# Pullman Power Products

## PRODUCT ENGINEERING DEPARTMENT

### QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

	REQ'D	APPROVED. BY CUSTOMER	VERIFIED BY P.P.P. Q.C.
Vendor Quality Assurance Program - ASME Section III			
Certified Drawings for Approval			
Qualified Procedures for Approval			
a. Welding			
b. Weld Repairs			
c. Heat Treatment			
d. Ultrasonic			
e. Radiograph			
f. Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
Documentation			
a. Mill Reports			
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section			
j. NDT Personnel Qualifications			
k. Manufacturers C of C			
Marking per P.P.P. Standard			

TRW Nelson Div.  
P.O. # 7177-12491

PREPARED BY R.C. King

DATE OF ISSUE 4-25-83

EXHIBIT 3

QC

**ORIGINAL**

PRIORITY

600 R

10 CFR-21  
(IS) or (IS NOT)  
ATTACHED**Pullman Power Products****DISCREPANCY REPORT**

D.R. No. 5739 <sup>1</sup> See pg 3  
 Iso. No. Various  
 Unit No. I  
 Code No. 8  
 Hold Tag (yes) <sup>X</sup> (no)

CUSTOMER: Pacific Gas & Electric SPEC. NO.: 8711 DATE: 1-17-84 <sup>1</sup> 3-15-84  
 PROJECT: Diablo Canyon JOB NO.: 7177 INSPECTOR: M. MacCrae/T.O'Neill/Cornish

DISCREPANT ITEM: NONCONFORMANCE TO ASME SECTION IX, MATERIAL & PROCEDURAL REQUIREMENTS  
 FOR WELDED STUDS. SYSTEM 14.

**EXPLANATION OF DISCREPANCY:**

PG&E G.C.  
 QUALITY CONTROL  
 REVIEWED  
 DATE 4/3/84

The QC Inspector has identified four (4) hangers [43-6G, 43-8G, 59N-1G and 59N-2G] as having had ASTM A325 studs welded to P1 materials. ASTM A325 is not referenced in ASME Section IX as P1 material and cannot be welded to P1 materials (as has been done) using W.P.Ss 7/8 without qualifying a welding procedure using this material. At present, Pullman has not qualified a procedure to weld A325 to P1 material. Studs were installed with full penetration double bevel welds using WPS 7/8 and E7018 electrodes.

NOTES: A325 is, by specification, a high strength fastener and the allowable carbon in this material warrant special welding considerations, such as preheat and PWHT to ensure

(continued - Page 2)

**RECOMMENDED DISPOSITION:**

INDICATE APPROVAL BY CIRCLING THE APPROPRIATE "RECOMMENDED DISPOSITION" <sup>1</sup> See page 3

PG&E G.C.  
 QUALITY CONTROL  
 REVIEWED  
 DATE 1-28-84

- A) Conduct a review of hanger packages to determine how wide spread the condition is:  
 1) Document all areas where A325 bolting material was used as a welded stud.  
 2) Report all locations to PG&E by revision of this DR.  
 B) Conduct procedure qualification for stud welds using A325 studs and P1 base material in accordance with ASME Section IX, 1983 Edition. Part QW, Article 1, Paragraph QW-192 and the following:  
 1) Delete the requirement for using automatic equipment.

(continued - Page 2)

Approved By P.P.P. Field Q.A. Mgr. H. Kanner Date 1/17/84 Customer J. Arnold/R. Proctor Date 1-29-84

FINAL DISPOSITION: ☐ In Accordance With Above

☐ Other (explanation and approval required)

Work Completed Insp: \_\_\_\_\_ Date: \_\_\_\_\_

Work Completed Insp: \_\_\_\_\_ Date: \_\_\_\_\_

EXPLANATION (IF NECESSARY): <sup>1</sup> Based upon correspondence with Pullman Power Products Corporate Office (see attached interoffice correspondence dated Feb. 3, 1984), and Section III, Table I-13.3 (also attached), the approved disposition of Rev 0

Continued - Page 3

P.P.P. Field Q.A. Manager A. Spautz Date 1-30-84 Customer D. Novak Date 4-2-84

STEPS TO PREVENT RECURRENCE ☐ Not Applicable

Memo has been issued to all engineering and QC personnel to assure that A325 studs or bolts are not used as welded studs (see attachment)

Field Q.A. Manager H. Kanner 1/17/84

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

ATTACH SKETCH IF NECESSARY

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

DISCREPANCY REPORT

D.R. NO. 5739 - page 2  
ISO. NO. Various  
UNIT NO. I  
CODE NO. 8

CUSTOMER: Pacific Gas & Electric SPEC. NO.: 8711 DATE: 1-17-84 1 3-15-84  
PROJECT: Diablo Canyon JOB NO.: 7177 INSPECTOR: M. MacCrae/T.O'Neill/Cornish

EXPLANATION OF DISCREPANCY: (Continued from page 1)

notch toughness in the final welded joint.

In some cases, A325 bolts have been used to fabricate weld studs by cutting the head off the bolt. Material quality and weldability are indeterminate as the material was purchased for an application other than for welding.

The attached copies of field warehouse requisitions and hanger drawings document the use of A325 material on component supports for System 14 (component cooling water) in Unit I. The possibility exists that A325 material may have been used in other locations.

Attached are the receiving reports and documentation for the studs referenced on the warehouse requisitions. For P.O. 7177-6882, Receiving Report 2100, there are no mill test reports, only a Certificate of Compliance as required by the P.O. exists.

For P.O. 7177-7523, Receiving Report 2372, a mill test report was received and is included.

RECOMMENDED DISPOSITION: (Continued from Page 1)

- 2) Perform welding using the SMAW process (WPS 7/8) using E7018 electrodes.
- 3) Prepare studs using a double bevel groove weld (chisel point). Back grind root before welding second side.
- 4) No preheat required.
- 5) Report results to PG&E by revision of this DR;

OR,

~~2~~

- A) ASWR hangers 43-6G, 43-8G, 59N-1G and 59N-2G and rework to remove the A325 studs. Install new studs using A-36 or other P1 material.
- B) Conduct review as noted in 1A. Report results to PG&E for disposition of specific hangers;

OR,

~~3~~  
1.27.84

PG&E to disposition. PER ENGINEERING EVALUATION,  
ACCEPT-AS-IS. REF TELECOPY FROM  
CLYDE NICHOLS TO BOB TORSTROM/J ARNOLD,  
DATED 1.27.84.

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

## DISCREPANCY REPORT

D.R. NO. 5739 - Page 3 1  
ISO. NO. Various  
UNIT NO. I  
CODE NO. 8

CUSTOMER: Pacific Gas & Electric SPEC. NO. 8711 DATE: 1-17-84 1 3-15-84  
PROJECT: Diablo Canyon JOB NO.: 7177 INSPECTOR: M. MacCrae/T.O'Neill/Cornish


### RECOMMENDED DISPOSITION: (Continued from Page 2)

1 4 PG&E to disposition THE SUBJECT SUPPORTS WILL BE REMOVED PER  
DN# DCI-EP-19109. INCLUDE A COPY OF THIS  
CLOSE OR AFTER A COPY (OF THIS DR) IS INCLUDED IN EACH  
PACKAGE. NOTE: AS A RESULT OF A PG&E REVIEW, 43-4G,  
43-5G, 43-7G, 43-9G, 59N3G AND 59N4G (NOT ADDRESSED IN THIS DR), WILL  
ALSO BE REMOVED PER DN# DCI-EP-19109.

### EXPLANATION: (Continued from Page 1)

this DR cannot be accepted as written. In addition, the condition of  
welding performed without a qualified weld procedure has not yet been  
addressed by disposition approval. Request re-evaluation of Rev 0  
Disposition and response to lack of qualified weld procedure.



DR 5739 

## INTEROFFICE CORRESPONDENCE

DATE February 3, 1984  
TO H. W. Karner  
FROM C. M. Neary  
SUBJECT Welding of A325 Bolts & DR 5739

I have received DR 5739 and the CMTR for 5/8" A325 Bolts, Heat No. E51206. I have evaluated the weldability of this material (to C.S. Plate with E7018) from both a Code and a metallurgical standpoint:

Code Evaluation

If these welds fall under ASME III, Subsection NF, the welding qualification must conform to ASME Section IX. The WPS used (WPS 7/8) is qualified for P-1 materials only. A325 may not be considered a P-1 material, as shown below:

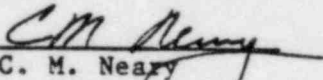
	<u>Allowed % Carbon</u>	<u>Tensile Requirements</u>
ASME P-1	.4% Max. (SA 372)	95 KSI (SA 724)
A 325	.3% Min.	120 KSI
HT E51206	.47% Actual	133 KSI Actual

A welding qualification must be performed for A 325 to P-1 materials.

Metallurgical Evaluation

Materials such as A 325 with elevated carbon contents and tensile strengths as shown above cannot be considered similar to A 105 and other P-1 material.

These bolts use their high carbon content to form martensite. Uncontrolled welding of this material may result in cracking. Testing should be performed to determine the sensitivity of this material to cracking during welding.

  
C. M. Neary  
QEG Welding Engineer

CMN/pas

cc: A.A. Eck  
E.F. Gerwin  
File

DR 5739A

TABLE I-13.3  
YIELD STRENGTH VALUES S, FOR BOLTING MATERIALS FOR CLASS 1, 2, 3, AND MC COMPONENT SUPPORTS

Nominal Composition	P. No.	Gr. No.	Spec. No.	Type or Grade	Class	Notes	Min. Yield Strength, ksi	Min. Ult. Tensile Strength, ksi	Yield Strength Intensity, ksi, for Metal Temp., °F, Not Exceeding									
									100	200	300	400	500	600	650	700	750	800
Carbon Steels																		
C	...	...	SA-194	2H	...	(1) (2)	...	...	...	...	...	...	...	...	...	...	...	...
C	1	1	SA-307	B	...	...	36	58	36.0	32.3	31.9	30.8	29.1	26.6	26.1	25.9	...	...
C	...	...	SA-325	1	...	(2) (6)	81	105	81.0	73.9	71.6	69.3	...	...	...	...	...	...
Low Alloy Steels																		
1Cr-0.2Mo	...	...	SA-194	7	...	(1)	...	...	...	...	...	...	...	...	...	...	...	...
1Cr-0.2Mo	...	...	SA-193	B7	...	...	105	125	105.0	98.0	94.1	91.5	88.5	85.3	83.0	80.6	77.5	74.0
1Cr-0.2Mo	...	...	SA-193	B7	...	...	95	115	95.0	86.5	85.1	82.3	80.1	77.1	75.1	73.0	70.1	66.9
1Cr-0.2Mo	...	...	SA-193	B7	...	...	75	100	75.0	69.9	67.2	65.4	63.2	60.9	59.2	57.5	55.4	52.7
1Cr-½Mo-V	...	...	SA-193	B16	...	...	105	125	105.0	102.0	99.6	97.5	95.4	92.5	90.3	88.2	85.8	83.1
1Cr-½Mo-V	...	...	SA-193	B16	...	...	95	110	95.0	92.1	90.0	88.2	86.4	83.7	81.7	79.8	77.5	75.3
1Cr-½Mo-V	...	...	SA-193	B16	...	...	85	100	85.0	82.5	80.7	78.9	77.1	75.0	73.1	71.4	69.4	67.2
1Cr-½Mo	...	...	SA-320	L7	...	...	105	125	105.0	98.0	94.1	91.5	88.5	85.3	83.0	80.6	77.5	74.0
1¾Ni-¼Cr-¼Mo	...	...	SA-320	L43	...	...	105	125	105.0	99.0	95.7	91.8	88.5	84.3	82.1	79.2	76.4	72.6
AISI 4037	...	...	SA-320	L7A	≤ 2½	(2) (3)	105	125	105.0	98.0	94.1	91.5	...	...	...	...	...	...
AISI 4037, 4340	...	...	SA-354	BC	≤ 2½	(2) (3)	109	125	109.0	102.0	98.5	95.6	92.8	88.7	86.0	82.9	...	...
AISI 4037, 4340	...	...	SA-354	BC	> 2½	(2) (3)	99	115	99.0	92.5	89.4	86.9	84.3	80.5	78.1	75.3	...	...
AISI 4037, 4340	...	...	SA-354	BD	& < 4	...	125	150	125.0	116.9	112.9	109.8	106.5	101.8	98.6	95.0	...	...
AISI 4037, 4340	...	...	SA-354	BD	≤ 1½	(2) (3)	125	150	125.0	116.9	112.9	109.8	106.5	101.8	98.6	95.0	...	...
1Cr-½Mo-V	...	...	SA-540	B21	1	...	150	165	150.0	143.4	138.6	134.4	130.2	124.2	120.2	116.6	...	...
1Cr-1Mn-¼Mo	...	...	SA-540	B22	1	...												
2Ni-¼Cr-¼Mo	...	...	SA-540	B23	1	...												
2Ni-¼Cr-½Mo	...	...	SA-540	B24	1	...												
1Cr-½Mo-V	...	...	SA-540	B21	2	...	140	155	140.0	133.8	129.3	125.4	121.5	116.1	112.1	108.9	...	...
1Cr-1Mn-¼Mo	...	...	SA-540	B22	2	...												
2Ni-¼Cr-¼Mo	...	...	SA-540	B23	2	...												
2Ni-¼Cr-½Mo	...	...	SA-540	B24	2	...												
1Cr-½Mo-V	...	...	SA-540	B21	3	...	130	145	130.0	124.1	120.5	116.4	112.9	107.8	104.1	101.1	...	...
1Cr-1Mn-¼Mo	...	...	SA-540	B22	3	...												
2Ni-¼Cr-¼Mo	...	...	SA-540	B23	3	...												
2Ni-¼Cr-½Mo	...	...	SA-540	B24	3	...												

192

Table I-13.3

SECTION III, DIVISION 1 - APPENDICES

DL 5739 Δ

1Cr- $\frac{1}{2}$ Mo-V	...	...	SA-540	B21	4	120	135	120.0	114.6	110.7	107.7	104.1	99.3	96.3	93.3	...	...
1Cr-1Mn- $\frac{1}{4}$ Mo	...	...	SA-540	B22	4												
2Ni- $\frac{3}{4}$ Cr- $\frac{1}{4}$ Mo	...	...	SA-540	B23	4												
2Ni- $\frac{3}{4}$ Cr- $\frac{1}{2}$ Mo	...	...	SA-540	B24	4												

#### Low Alloy Steels

1Cr- $\frac{1}{2}$ Mo-V	...	...	SA-540	B21	5	105	120	105.0	100.2	97.2	93.9	90.9	87.0	84.3	81.6	...	...
1Cr-1Mn- $\frac{1}{4}$ Mo	...	...	SA-540	B22	5												
2Ni- $\frac{3}{4}$ Cr- $\frac{1}{4}$ Mo	...	...	SA-540	B23	5												
2Ni- $\frac{3}{4}$ Cr- $\frac{1}{2}$ Mo	...	...	SA-540	B24	5												
1Cr- $\frac{1}{2}$ Mo-V	...	...	SA-540	B21	5	100	115	100.0	95.4	92.7	89.4	86.7	82.8	80.2	77.7	...	...
1Cr-1Mn- $\frac{1}{4}$ Mo	...	...	SA-540	B22	5												
2Ni- $\frac{3}{4}$ Cr- $\frac{1}{4}$ Mo	...	...	SA-540	B23	5												
2Ni- $\frac{3}{4}$ Cr- $\frac{1}{2}$ Mo	...	...	SA-540	B24	5												

#### High Alloy Steels

##### Precipitation Hardened Steels

12Cr	...	...	SA-437	B4B	...	105	145	105.0	100.5	97.2	94.8	92.7	90.6	89.7	89.1	...	...
12Cr	...	...	SA-437	B4C	...	85	115	85.0	81.6	78.9	76.8	75.0	73.8	72.9	72.0	...	...
S80 17Cr-4Ni-4Cu	...	...	SA-564	630	(5)	115	140	115.0	106.3	101.9	98.3	95.2	92.8	91.5	...	...	...
17Cr-4Ni-4Cu	...	...	SA-705	630	(5)												

##### Austenitic Stainless Steels

18Cr-8Ni	8	1	SA-193	B8	1	30	75	30.0	25.0	22.5	20.7	19.4	18.2	17.9	17.7	17.3	16.8
18Cr-8Ni	8	1	SA-193	B8A	1A												
18Cr-10Ni-Cb	8	1	SA-193	B8C	1	30	75	30.0	27.5	25.6	23.9	22.5	21.4	21.0	20.6	20.5	20.3
18Cr-10Ni-Cb	8	1	SA-193	B8CA	1A												
16Cr-12Ni-2Mo	8	1	SA-193	B8M	1	30	75	30.0	25.8	23.3	21.4	19.9	18.8	18.5	18.1	17.8	17.6
16Cr-12Ni-2Mo	8	1	SA-193	B8MA	1A												
18Cr-10Ni-Ti	8	1	SA-193	B8T	1	30	75	30.0	25.4	22.7	20.6	19.1	18.2	17.8	17.5	17.3	17.2
18Cr-10Ni-Ti	8	1	SA-193	B8TA	1A												
18Cr-8Ni	8	1	SA-320	B8	...	30	75	30.0	25.0	22.5	20.7	19.4	18.2	17.9	17.7	17.3	16.8
18Cr-10Ni-Cb	8	1	SA-320	B8C	...	30	75	30.0	27.5	25.6	23.9	22.5	21.4	21.0	20.6	20.5	20.3
18Cr-10Ni-Ti	8	1	SA-320	B8T	...	30	75	30.0	25.4	22.7	20.6	19.1	18.2	17.8	17.5	17.3	17.2
18Cr-8Ni	8	1	SA-320	B8F	...	30	75	30.0	25.0	22.5	20.7	19.4	18.2	17.9	17.7	17.3	16.9
16Cr-12Ni-2Mo	8	1	SA-320	B8M	...	30	75	30.0	25.8	23.3	21.4	19.9	18.8	18.5	18.1	17.8	17.6

Notes to Table I-13.3 on next page.

DR 5739A

Table I-13.3

SECTION III. DIVISION 1—APPENDICES

NOTES TO TABLE I-13.3

GENERAL NOTE:

The tabulated values of tensile strength and yield strength are those which the Committee believes are suitable for use in design calculations required by this Section. At temperatures above room temperature, the values of tensile strength tend toward an average or expected value which may be as much as 10% above the tensile strength trend curve adjusted to the minimum specified room temperature tensile strength. At temperatures above room temperature, the yield strength values correspond to the yield strength trend curve adjusted to the minimum specified room temperature yield strength. Neither the tensile strength nor the yield strength values correspond exactly to either "average" or "minimum" as these terms are applied to a statistical treatment of a homogeneous set of data.

Neither the ASME Material Specifications nor the rules of this Section require elevated temperature testing for tensile or yield strengths of production material for use in Code components. It is not intended that results of such tests, if performed, be compared with these tabulated tensile and yield strength values for ASME Code acceptance/rejection purposes for materials. If some elevated temperature test results on production material appear lower than the tabulated values by a large amount (more than the typical variability of material and suggesting the possibility of some error) further investigation by retest or other means should be considered.

NOTES:

- (1) No yield or tensile strength specified. Assume to be the same as equivalent grade in SA-193-B7. Then the yield strength may be taken as the same for that grade.
- (2) No welding permitted.
- (3) The maximum tensile strength shall not exceed the minimum specified tensile strength by more than 40.0 ksi. Where the specification does not limit hardness, the maximum surface hardness shall not exceed the hardness values corresponding to the maximum tensile strength, as determined from the applicable tables in SA-370.
- (4) This material has reduced toughness at room temperature after exposure for about 5000 hr at 600°F and after shorter exposure above 650°F.
- S80 (5) These values apply to material that has been age-hardened at 1100°F.
- S81 (6) Yield strength values are applicable to Type 1 for bolt sizes 1/2 through and including 1 1/2 in.

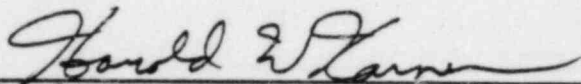


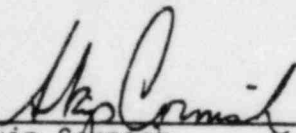
## INTEROFFICE CORRESPONDENCE

DATE JANUARY 17, 1984  
TO ALL FIELD ENGINEERS/QC INSPECTORS  
FROM H.W. KARNER/SKIP CORNISH  
SUBJECT WELDED STUDS (A325)

There have been several cases identified where A325 bolts have had the heads removed and have been used as a welded stud in hanger applications. This material is not qualified for use in welded applications by our weld procedures. A DR has been submitted to PG&E concerning this matter.

Welded studs must be A36 or other P1 material. If there are any questions, contact your Supervisor.

  
\_\_\_\_\_  
Harold W. Karner  
QA/QC Manager

  
\_\_\_\_\_  
Skip Cornish  
Chief Field Engineer

HWK:SC:sam





DR 5739

SF 8.2 (05-78)

**Pullman Power Products**  
Division of Pullman Incorporated  
**FIELD WAREHOUSE REQUISITION**

SYSTEM 1-14 LINE SPEC. 1-K2-314-12 DATE 3-16-83  
ISO NO. N/A DETAIL DWG. NO. 049266 DDR NO. N/A ACT. NO. 7177 PAGE NO.        OF       

[illegible]

DELIVER TO AREA

REC'D. BY

ENG. APPROVAL

FOREMEN

Q. A. APPROVED

FILLED BY

WHITE COPY - Q.A.

CANARY COPY - WAREHOUSE

PINK COPY - FIELD ENGINEERING



F-8.2 (05-78).

## Division of Pullman Incorporated

1-K2-318-128

Mgr. # 43-86

SYSTEM 1-11 LINE SPEC. 1-12-23 10-3 DATE 3-26-83  
ISO NO. 049255 DETAIL DWG. NO. 500043 UDF. NO. 7177 ACT. NO. 7177 PAGE NO. 1 OF 1

Cont. T	Red Bull 3-28-83
DELIVER TO AREA	Q. A. APPROVED
REC'D. BY	FILLED BY
ENG. APPROVAL	

WHITE COPY - Q.A.

CANARY COPY - WAREHOUSE

PINK COPY — FIELD ENGINEERING



# Cardinal

INDUSTRIAL PRODUCTS CORPORATION



1020

3873 WEST OQUENDO

(TOLL FREE) 800-634-6961  
PHONE (NEVADA) 702-739-1966  
LAS VEGAS, NEVADA 89118

TO:

Pullman Power Products  
P.O. Box 367  
Avila Beach, CA 93424

## REPORT OF CHEMICAL AND PHYSICAL TEST

P.O. Item	Letter	QUANTITY	DESCRIPTION	CUSTOMER ORDER NO.	OUR ORDER NO.	SPECIFICATION	SHIPPING DATE
	A	32	3/4 - 10 X 3-1/4" Hex Bolts	F7177-7523	CI 1297	ASTM A325	3-30-79
	B	32	7/8 - 9 X 5" Hex Bolts	"	"	"	"
	C	20	3/8 - 11 X 2-3/4" Bolts	"	"	"	"

### CHEMICAL ANALYSIS

ITEM NO.	GRADE	HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	V
A		N53869	.39	.97	.013	.018	.23				
B		N35224	.34	.87	.005	.020	.25				
C		E51206	.47	.84	.024	.015	.20				

### MECHANICAL PROPERTIES

ITEM NO.	TENSILE STRENGTH	YIELD STRENGTH	PROOF LOAD	ELONGATION	PER CENT RED. AREA	HARDNESS		MINIMUM TEMPERING TEMP.
	PSI	PSI	LBS.	PERCENT IN 2"		BHN	R/C	TEMP.
A	150,000		28,400 Good				33	300°F
B	138,000		39,250 Good				28	800°F
C	133,700		19,200 Good				30/ 31	800°F

We hereby certify that the foregoing data is a true copy of the data furnished us by the producing mill or the data resulting from tests performed by Cardinal Foundry and/or Cardinal Industrial Products Corporation.

THIS 30 DAY OF March 1979  
Marty Richardson

*C. P. Davis*  
AUTHORIZED AGENT

DE 5739



# Cardinal

INDUSTRIAL PRODUCTS CORPORATION



(TOLL FREE) 800-634-6861  
3873 WEST OQUENDO + PHONE (NEVADA) 702-739-1966  
LAS VEGAS, NEVADA 89118

TO:

Pullman Power Products  
P.O. Box 367  
Avila Beach, CA 93424

CF-2

Letter	QUANTITY	DESCRIPTION	CUSTOMER ORDER NO.	OUR ORDER NO.	SPECIFICATION	SHIPPING DATE
D	20	5/8 - 11 Hvy Hex Nut	F7177-7523	CI 12970	ASTM A194 2H	3-30-79
E	24	7/8 - 9 Jam Nuts	"	"	"	"
F	24	1 - 8 Jam Nuts	"	"	"	"

FOR INFORMATION ONLY

## CHEMICAL ANALYSIS

ITEM NO.	GRADE	HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	V
D		A84700	.42	.81	.015	.015	.29				
E		Y730796	.47	.76	.015	.021	.28				
F		KA0111	.40	.75	.032	.014	.25				

APPROVED

M. W. KELLOGG

Q. A.

Diablo Canyon Project

INITIALS

## MECHANICAL PROPERTIES

ITEM NO.	MANUFACTURING	PROOF LOAD		HARDNESS		HARDNESS AFTER 24 HRS		CHARPY IMPACT TEST		MINIMUM TEMPERING TEMP
	PROCESS	LBS.	TEST METHOD	BHN	R/C	BHN	R <sub>B</sub>	FT. LBS. AVG.	TEMP.	
D	Hot Forged	39,550	Mandrel		28/32		99			550°C
			Good							
E	"		N/A	278		231				850°F
F	"		N/A		28/32		100			550°C

we hereby certify that the foregoing data is a true copy of data furnished us by the producing mill or the data resulting from tests performed by Cardinal Foundry and/or Cardinal Industrial Products Corporation.

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 30 DAY OF Mar 1979

Marty Richardson

*C. McQuinn*  
AUTHORIZED AGENT

DE 5739



# Diablo Canyon Project



PACIFIC GAS AND ELECTRIC COMPANY  
BECHTEL POWER CORPORATION

## FACSIMILE COVER LETTER

TIME: \_\_\_\_\_

DATE: 1/27/84

SHEET: 1 OF 3

TO:

COMPANY: JOBSITE - GC

CITY & STATE: \_\_\_\_\_

ATTENTION: BOB TORSTROM / J. ARNOLD - GC

TELEPHONE NUMBER OF TELECOPIER: \_\_\_\_\_

JOBSITE (GC): 805-595-2060

JOBSITE (MPO): \_\_\_\_\_

OWSITE: \_\_\_\_\_

OTHER: \_\_\_\_\_

TOTAL NUMBER OF PAGES, INCLUDING COVER LETTER: 3

IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL ILEANA/ALBA (415) 768-6

TRANSMITTAL SPEED: \_\_\_\_\_ MINUTES

WE ARE TRANSMITTING FROM A PANAFAX MY1200 AUTOMATIC MACHINE (415) 768-1667

CONFIRMATION NUMBER: 805-541-7505

FROM: CYDE NICHOLS

EXTENSION: 8-0293

SPECIAL INSTRUCTION:

TIME SENT OUT:

0022P/001P

P.O. BOX 3885 • SAN FRANCISCO, CALIFORNIA 94120

DR 5139

DR 5739 <sup>2</sup>

THE FOLLOWING IS PLATE'S DISPOSITION FOR  
THE ABOVE DISCREPANCY

1. THIS DISCREPANCY IS LIMITED TO THE  
WESTINGHOUSE DESIGNED SUPPORTS  
43/46 THRU 96 AND 99 N/4 THRU  
46.
2. THE A325 MATERIAL WHEN NO TYPE IS  
SPECIFIED IN P.O. IS SUPPLIED IN THE  
TYPE / CONDITION (REF SECTION 1.2.0. <sup>OF</sup>  
THE A325 MATERIAL SPECIFICATION).
3. THE A325 TYPE 1 MATERIAL HAS A  
COMPOSITION SIMILAR TO THAT OF P-1  
MATERIALS (E.G. A105, etc...). THERE  
SHOULD BE NO PROBLEMS WITH WELDABILITY.  
THERE ARE NO SPECIAL PREHEAT / POSTWELD  
HEAT TREATMENT REQUIREMENTS FOR THE  
5/8" SIZE USED. THE A325, TYPE 1 CAN  
BE CONSIDERED (ASSUMED) TO BE A P-1  
MATERIAL EVEN THOUGH IT IS NOT <sup>CALLED</sup> ~~OUT~~  
OUT IN SECTION IX. A325, TYPE 1  
IS SUPPLIED IN A QUENCHED AND DR 5739

TEMPERED CONDITION. AFTER WELDING<sup>IZED</sup>  
 TO A36 IT WOULD BE IN A NORMAL<sup>IZED</sup>  
 CONDITION AND WOULD NOT HAVE THE  
 SAME ~~TEMPERATURE~~ PHYSICAL PROPERTIES  
 AS IN THE QUENCHED & TEMPERED  
 CONDITION. THE PHYSICAL PROPERTIES  
 & ALLOWABLES WOULD HAVE TO BE  
 ASSUMED TO BE THOSE OF BOLTS  
 (A307 GRADE B) NORMALLY USED IN  
 THIS APPLICATION.

4. USING THESE A307 GRADE B ALLOWABLES<sup>ABLES</sup>  
 WE HAVE QUALIFIED THESE SUPPORTS  
 USING THESE BOLTS PER THE  
 REQUIREMENTS OF AISC 7<sup>TH</sup> EDITION.

BASED ON THE ABOVE THESE SUPPORTS<sup>ORTS</sup>  
 ARE ACCEPTABLE FOR USE AS IS.

BOB: PLS NOTE THAT IF FURTHER BACKUP  
 DATA IS NEEDED WE CAN GET  
 IT FROM BELNTEL MATHS. (i.e. WELD  
 DATA etc....).

DR 539

Chris and Bob Bayer

DR 5739 where we welded A325 bolts to carbon steel with a double bevel chisel point prep on bolt using WPS 7/8 E7018 electrodes with a background. No preheat on N.D.E. The following is PG&E's disposition for the above discrepancy:

1. This discrepancy is limited to the Westinghouse designed supports 43/4G thru 9G and 59 N/1G thru 4G.
2. The A325 material when no type is specified in P.O. is supplied in the type 1 condition (Ref. Section 1.2 of the A325 material specification).
3. The A325 Type 1 material has a composition similar to that of P-1 materials (e.g. A105, etc...). There should be no problems with weldability. There are no special preheat/post-weld Heat Treatment requirements for the 5/8" size used; The A325, Type 1 can be considered (assumed) to be a P-1 material even though it is not called out in Section IX. A325, Type 1 is supplied in a quenched and tempered condition. After welding to A36 it would be in a normalized condition and would not have the same physical properties as in the quenched and tempered condition. The physical properties and allowables would have to be assumed to be those of bolts (A307 Grade B) normally used in this application.
4. Using these A307 Grade B allowables, we have qualified these supports using these bolts per the requirements of AISC 7th Edition.

Based on the above, these supports are acceptable for use as is.

Bob: PL's note that if further back-up data is needed we can get it from Bechtel M & QS, Vic, weld data, etc...).

DR 5739



# PG&E WORK REQUEST

File  
QA  
P. Watson  
P. Moking  
H. Kerner

☒ CLASS ONE  
☒ NON CLASS ONE  
REQUIRES QUALITY ASSURANCE  
3.6.84 ☐ NON CLASS ONE

NUMBER PPP-M-196

INITIATED BY: N.A. GAUDIUSO

DATE: 3.5.84

DIRECTED TO: PULLMAN POWER PRODUCTS  
NAME OF CONTRACTOR

PG&E G.C. QUALITY CONTROL REVIEWED & APPROVED <u>J.E. [Signature]</u> DATE: <u>3/6/84</u>
---

REQUIRED DUE DATE: 3.6.84

DESCRIPTION OF WORK: MOCK-UP WELDING OF A325 BOLTS TO A36 MATERIAL.

NOTE: WORK TO BE PERFORMED BY B. HUDSON (STENC.# VI) AND J. WHITLEY (STENC.# 3N).  
WORK TO PTGC MECHANICAL DEPT. DIRECTION.

DIRECT ANY QUESTIONS TO NICK GAUDIUSO X2728.

SAN NO.
---------

JOB NUMBER	DIV	LOC	ACCT	ACTV	SPEC	ID
GM 167027	22	1840	365	40	—	—

ACCOUNTING

DRAWING NO.	DCN	CCO	MCO
DR 5739			

ESTIMATED MATERIAL (10) A325 BOLTS (2" LG x 5/8" Ø) W/ NUTS & WASHERS  
A36 PLATE MATERIAL, 3/4" THICK, ~10" WIDE.

ESTIMATED MANDAYS: 1

ACTUAL MANDAYS: \_\_\_\_\_

PACIFIC GAS AND ELECTRIC COMPANY  
RESIDENT ENGINEER APPROVAL

CONTRACTOR APPROVAL: C.F.E.  
TITLE

[Signature]  
SIGNATURE OF REQUESTER

J. ARNOLD / R. Tortorella 3-6-84  
(Signature) (Date)

[Signature] 3-6-84  
(Signature) (Date)

COMPLIANCE: \_\_\_\_\_ DATE: \_\_\_\_\_

PACIFIC GAS AND ELECTRIC ACCEPTANCE: \_\_\_\_\_  
(Signature) (Date)

DISTR: WHITE, GREEN & YELLOW — CONTRACTOR  
PINK — PG&E RESIDENT ENGINEER FIELD COPY  
GOLD — PG&E ADMIN. FILE COPY

DR 5739  
TITLE

# INSPECTION REPORT

RECEIVING REPORT NO 3646

JOB NO. 7177

APPLICABLE TO:  
(CHECK)

RECEIVING

☒

**SUBCONTRACTOR.**



HOLD

☐ MILL TEST REPORTS

☐ X-RAYS

☐ OTHERS

VENDOR ALLIED NUT & BOLT

P.O. No. 7177-12492

DATE 6-23-83

MANUFACTURER

INSPECTED BY

DATE 6-23-83

[illegible]**QUANTITY**

## MATERIAL

A 5/8" x 3" LG. BOLTS

200

C.S. A 325

B 5/8" X 2" LG BOLTS

200

C.S. A 325

[illegible]



Pullman Power Products

Division of Pullman Incorporated

FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

JOB NO. 7177		DATE 4/21/83	SHEET NO. 1 of 2	SHIPPING ADDRESS PULLMAN POWER PRODUCTS c/o Pacific Gas & Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA		REQ. - P.O. - NO. F- 7177-12492 R.R. -			
DISCOUNT TERMS		SHIPPING TERMS		VIA		JOB COST CODE: 122			
				VENDOR: ALLIED NUT & BOLT P.O. BOX 670 KING OF PRUSSIA, PA 19406		SUBCONTRACT NO. 3646			
MAIL 4 COPIES OF INVOICES TO: P.O. Box 367 Avila Beach, CA 93424						DR 5739			
ITEM (LETTER)	QTY. REQ/D.	DESCRIPTION				UNIT PRICE	TOTAL	DATE REC'D.	CITY REC'D.
A	200	5/8" x 3" LG BOLTS C.S. A325				1 09	218 00		
B	200	5/8" x 2" LG BOLTS C.S. A325				91	182 00		
SEE SPECIAL REQUIREMENTS ATTACHED:									
TOTAL PRICE						400 00			

NEEDED FOR: HGRS. STOCK FOR WAREHOUSE			REMARKS			RECEIVING DEPARTMENT		
DATE NEEDED:	DATE ORDERED: 6-7-83	DATE PROMISED: 1 week	REIMBURSABLE  CLASS I			CARRIER:		
DWG(S) ATTACHED:						COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>		
PREPARED BY: PAT MALLOY	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>				PREPAID: \$ COLLECT: \$		
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.						RECEIVED BY:		
SR MUST APPEAR ON ALL INVOICES, BILLS OF LADING AND CORRESPONDENCE. MARK ALL SHIPPING TAGS WITH ABOVE ORDER NUMBER.								



FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

RR 3646

7177		DATE 4/21/83	SHEET NO. 2 OF 2	SHIPPING ADDRESS: PULLMAN POWER PRODUCTS c/o Pacific Gas & Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424		REQ. NO. F- 7177- 12492
DISCOUNT TERMS		SHIPPING TERMS		VENDOR: ALLIED NUT & BOLT P.O. BOX 670 KING OF PRUSSIA, PA 19406		JOB COST CODE: 122
SPECIAL REQUIREMENTS FOR STRUCTURAL BOLTS OR FASTENERS FOR HANGERS:						MAIL 4 COPIES OF INVOICES TO:
						P. O. Box 367 Avila Beach, CA 93424
HB1.	Supplier shall furnish three copies of a Manufacturer's Certificate of Compliance signed by manufacturer indicating that materials furnished are in compliance with this Purchase Order, with specifications, or as listed in suppliers or manufacturers catalog.					
HB2.	Certificate of Compliance shall be traceable to our Purchase Order and Item No.					
HB3.	All required documentation shall be sent the day of each shipment to PULLMAN POWER PRODUCTS, P.O. Box 367, Avila Beach, CA 93424 Attn: Q.A. Dept. In addition, a copy shall accompany each shipment.					
HB4.	Any nonconformance to the requirements of the Purchase Order will be considered just cause for return of materials without cost to buyer.					
HB5.	Materials shall be domestically manufactured.					

RR 5739

NEEDED FOR:		
DATE NEEDED:	DATE ORDERED: 6-7-83	DATE PROMISED:
DOC(S) ATTACHED:		
PREPARED BY:	APPROVED BY:	PURCHASED BY:

REMARKS  
SOURCE DOCUMENT REQUIREMENTS  
Corp. Appr. Vendor; May Use  
Site Appr. Vendor  
(All) Hanger CL1, G,E, Sprinkler  
Spec M-10  
8724 Cardox

RECEIVING DEPARTMENT	
CARRIER:	
COMPLETE <input type="checkbox"/>	PARTIAL <input type="checkbox"/>
PREPAID: 3	COLLECT:
RECEIVED BY:	

IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.

CLASS I

NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LAD  
SLIPS AND CORRESPONDENCE. MARK ALL SHIPPING TAG  
WITH ABOVE ORDER NUMBER.





PRODUCT ENGINEERING DEPARTMENT

QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

	REQ'D	APPROVED BY CUSTOMER	VERIFIED BY P.P.P. Q.C.
1. Vendor Quality Assurance Program - ASME Section III			
2. Certified Drawings for Approval			
3. Qualified Procedures for Approval			
a. Welding			
b. Weld Repairs			
c. Heat Treatment			
d. Ultrasonic			
e. Radiograph			
f. Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
4. Documentation			
a. Mill Reports			
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section			
j. NDT Personnel Qualifications			
k. Manufacturers C of C	✓		✓ <i>Slide 6-23-83</i>
5. Marking per P.P.P. Standard			

*allied Nut & Bolt*

*P.O. # 7177-12492*

CLASS I

*DR 5739*

PREPARED BY *R.C. King*  
APPROVED BY *L. Spitzer 6-3-83*

DATE OF ISSUE *4-25-83*

PAGE      of

RR30  
3646

RR3646



# ALLIED NUT & BOLT CO.

520 HERTZOG BLVD. • P.O. BOX 670 • KING OF PRUSSIA, PA 19406

215-275-2200

MERCHANDISE NOT RETURNABLE  
WITHOUT OUR WRITTEN CONSENT.  
ALL CLAIMS FOR DAMAGES OR  
VARIATIONS MUST BE MADE WITH-  
IN TEN DAYS AFTER RECEIPT OF  
GOODS.

SOLD TO

SHIPPED TO

Pullman Power Products

Pullman Power Products

Box 367

c/o Pacific Gas & Electric

Avila Beach, CA 93424

Diablo Canyon Power Plant

7 miles North of

Avila Beach, CA 93424

SERVICE CHARGE  
1% PER MONTH  
UNPAID BALANCE

D 51008

TERMS: 2% 10 NET 30

TWX: 5106600000

DATE INVOICE 6/14/83	QUOT. ORDER NO. Y-7177-L1692	SALESMAN JHR	COMPLETE PARTIAL	SHIPPED VIA	FREIGHT PPD/COL	PCS. 2	WEIGHT
QTY. ORDER	QTY. SHIPPED	CODE NO.	DESCRIPTION				
100 200	100 ✓ 200 ✓		3/8-11 x 3 A325 Type I Bolt 5/8 x 2				
<div>RECEIVED STATION CONSTRUCTION DEPARTMENT JUN 23 1983 PULLMAN POWER PROD. AVILA BEACH, CALIF. JOB No. 7177</div> <div>RECEIVED JUN 23 1983 DIABLO CANYON SITE</div>							

PACKING LIST

CLASS I

DR 5739



# Atlas Freight Lines, Inc.

AMATEUR

PROCLAMATION

FOR REVERSE SIDE FOR TERMINAL LOCATIONS

RECEIVED		RECEIVED	
JUN 2 1983		JUN 2 1983	
DIABLO CANYON, CALIF		DIABLO CANYON, CALIF	
CLASS 1		CLASS 1	
DRIVER		BY	
FULL NAME PLEASE		FULL NAME PLEASE	
CONSIGNEE COPY		CONSIGNEE COPY	

RR 3646



# ALLIED NUT & BOLT CO.

520 HERTZOG BLVD. • P.O. BOX 670 • KING OF PRUSSIA, PA. 19406  
215-275-2200

## CERTIFICATE OF COMPLIANCE

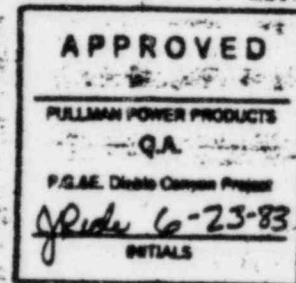
CUSTOMER: PULLMAN POWER PRODUCTS

SHIPPED TO: DIABLO CANYON POWER PLANT

SHIPPED FROM: KING OF PRUSSIA, PA

CUSTOMER P.O. # F 7177 - 12492

OUR INVOICE # D 51008



MATERIAL FURNISHED:  
200 - 5/8-11 x 3 Heavy hex structural bolt  
200 - 5/8-11 x 2 Same

We certify that to the best of our knowledge as contained in the records of Allied, that the material shown on the above P.O. and Invoice numbers does conform to the A.S.T.M. Specification A-325 covering High-Strength Bolts for Structural Steel Joints, including Suitable Nuts and Plain Hardened Washers.

ALLIED NUT & BOLT CO., INC.  
King of Prussia, Pa. 19406

DR 5739

# CLASS I



## INSPECTION REPORT

RECEIVING REPORT NO. 2100

JOB NO. 2127

APPLICABLE TO:  
(CHECK)

RECEIVING

SUBCONTRACTOR

HOLD

☐ MILL TEST REPORTS☐ X-RAYS☐ OTHERS

VENDOR

TEXAS BELT

P.O. NO. 111-6882

DATE \_\_\_\_\_

MANUFACTURER

TEXAS B.L.T.

INSPECTED BY

L. Richardson

DATE \_\_\_\_\_

12/4/78

ITEM*	PART NAME
-------	--------------

PART  
NAME

QUANTITY

## MATERIAL

A. 5/8" x 2" Bolt w/ 2 nuts

50

A325

B.  $\frac{5}{8} \times 2\frac{3}{4}$  RLT w/2 nuts

50

2.  $\frac{3}{4} \times 3"$  BLT w/ 2 NUTS

20

~~FOR INFORMATION~~  
~~ONLY~~

[illegible]



NEEDED FOR: <span style="float: right;">365/07 Hanger</span>			REMARKS		RECEIVING DEPARTMENT	
DATE NEEDED: A.S.A.P.	DATE ORDERED: 10/16/78	DATE PROMISED: Stock	REIMBURSABLE		CARRIER:	
WG(S) ATTACHED:					COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>	
PREPARED BY: C. Heinzenberger	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>			PREPAID: \$ COLLECT: \$	
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.					RECEIVED BY:	
OUR ORDER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE. MARK ALL SHIPPING TAGS						

Don't know  
Bill Went.

FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

JOB NO. 7177		DATE 10-10-78	SHEET NO. 2 of 2	SHIPPING ADDRESS: Pullman Power Products c/o Pacific Gas and Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424		REQ. NO. P.O. NO. F- 7177- R.R.
DISCOUNT TERMS 1% 10		SHIPPING TERMS FOB- Houston		VENDOR: Texas Bolt		JOB COST CODE: SUBCONTRACT NO.
VIA						MAIL 4 COPIES OF INVOICES TO: P.O. Box 367 Avila Beach, CA 93424

[illegible]

NEEDED FOR:			REMARKS	RECEIVING DEPARTMENT	
DATE NEEDED:	DATE ORDERED:	DATE PROMISED:		CARRIER:	
DWG(S) ATTACHED:				COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>	
PREPARED BY: <i>Alan</i>	APPROVED BY: <i>Jim</i>	PURCHASED BY:		PREPAID: \$	COLLECT: \$
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS STATED ON THE REVERSE SIDE HEREOF.				RECEIVED BY:	
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING					



PRODUCT ENGINEERING DEPARTMENT  
QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

	Req'd	Approved by Customer	Verified by M. W. K. Q. C.
1. Vendor Quality Assurance Program - ASME Section III	✓		RUR
2. Certified Drawings for Approval			
3. Qualified Procedures for Approval			
a. Welding			
b. Weld Repairs			
c. Heat Treatment			
d. Ultrasonic			
e. Radiograph			
f. Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
4. Documentation			
a. Mill Reports			
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section			
j. NDT Personnel Qualifications			
k. Certificate of Compliance	✓		RUR
5. Marking per M. W. K. Standard			

TEXAS BOLT  
PO# 7177-6892

PREPARED BY

R. Richardson

DATE OF ISSUE  
PAGE

DR 5739

10/13/98  
OF



PO 7177-6882

FROM: TEXAS BOLT

P.O. BOX 1211

HOUSTON, TEXAS

TO PULLMAN POWER PROD.

DIABLO CANYON POWER PLANT

AVILA BEACH, CALIF

ITEM

A - mp (50) -  $5/8" \times 2"$  A325 BOLTS w/2 NUTS EACH  
B (50) -  $5/8" \times 2\frac{3}{4}"$  A325 BOLTS w/2 NUTS EACH  
C (20) -  $3/4" \times 3"$  BOLTS w/2 NUTS EACH

FOR INFORMATION  
ONLY

RECEIVED  
JUN 30 1978

PULLMAN POWER PRODUCTS  
AVILA BEACH, CALIF.  
JOB NO. 7177

DR5739

# TEXAS BOLT COMPANY

Manufacturers of Industrial Fasteners

3233 WEST 11TH ST. • P. O. BOX 1211

HOUSTON, TEXAS 77001

PHONE: 869-7111

AREA CODE 713

CABLE: "TEXBOLT"

November 21, 1978

Pullman Power Corporation  
Division of Pullman Incorporated  
P. O. Box 367  
Avila Beach, California 93424

Your Order No. F7177-6882 (128803)

Gentlemen:

We hereby certify that the Bolts and Nuts on your above order were produced, inspected, and/or tested in accordance with ASTM A325 specifications. These products meet all applicable requirements.

Very truly yours,

FOR INFORMATION

ONLY

*[Signature]*  
Edward J. Chiranza

APPROVED

M. W. KELLOGG

Q. A.

P.G.E. Diablo Canyon Project

*[Signature]* 12/4/78  
INITIALS

EJC/tb

State of Texas  
County of Harris

Subscribed and sworn to before me this 21st day of  
November, 1978.

*[Signature]*  
Glenda Schube

Notary public in and for Harris County, Texas.  
My commission expires Oct 20, 1980.

DR 5739

PULLMAN POWER PRODUCTS  
QUALITY ASSURANCE DEPARTMENT  
INSPECTION REPORT

RECEIVING REPORT NO. 2372  
JOB NO. 7177

APPLICABLE TO:  
(CHECK)

RECEIVING

SUBCONTRACTOR

HOLD

☐ MILL TEST REPORTS☐ X-RAYS☐ OTHERS

VENDOR

P.O. NO.

DATE \_\_\_\_\_

MANUFACTURER

INSPECTED BY

DATE

ITEM	PART NAME	QUANTITY	MATERIAL
A	3/4" x 3 1/4" BOLTS	32	A325
B	7/8" x 5" "	32	
C	5/8" x 2 3/4" "	20	
D	5/8" Hex Hex Nut	20	A194-2H
E	7/8" " " "	24	
F	1" " " "	24	

**FOR INFORMATION ONLY**

FOR INFORMATION  
ONLY

[illegible]



Pullman Power Products  
Division of Pullman Incorporated

74-78-38 REV 4/15/79

FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

JOB NO. 7177		DATE 3-26-79		SHEET NO. 1 of 2		SHIPPING ADDRESS: PULLMAN POWER PRODUCTS c/o Pacific Gas & Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424		REQ.- P.O.- NO. F- 7177-7523 R.R.-					
DISCOUNT TERMS		SHIPPING TERMS		VIA		CARDINAL 3873 W. Quendo Las Vegas, Nevada 89118 Attn: Mick Donovan		JOB COST CODE: 121 SUBCONTRACT NO.					
ITEM (LETTER)		QTY. REQ/D.		DESCRIPTION		UNIT PRICE		TOTAL		DATE REC'D.		QTY. REC'D.	
A	32	3/4 - 10 X 3 1/4" Hvy Hx Mach Bolts		A325		2 26		72 32					
B	32	7/8 - 9 X 5" Hvy Hx Mach Bolts		A325		2 61		83 52					
C	20	5/8 - 11 X 2 3/4" Hvy Hx Mach Bolts		A325		2 02		40 40					
D	20	5/8 - 11 Hvy Hx Mach Bolts		A325 <sup>NUT</sup> A194-2H		47		9 40					
E	24	7/8" Ø Hvy Hx Half Nuts		A194-2H		2 72		65 28					
F	24	1" Ø Hvy Hx Half Nuts		A194-2H		3 09		74 16					
						CERTS		75 00					
						SPECIAL REQUIREMENTS ATTACHED							
						CBla. Chemical and Physical analysis shall be actual, not typical and in accordance with requirements of ASTM A194-2H for nuts and A325 for bolts.							
						TOTAL PRICE		420 08					

NEEDED FOR: EQUIP ANCH MOD UNIT I & II REORDER		
DATE NEEDED: IMMEDIATELY	DATE ORDERED: 3-21-79	DATE PROMISED: Week
DWG(S) ATTACHED:		
PREPARED BY: Herman Van	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.		
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE MARK ALL SHIPPING TAGS		

REMARKS

RECEIVING DEPARTMENT

CARRIER:

COMPLETE ☐

PARTIAL ☐

PREPAID:  
\$

COLLECT:  
\$

RECEIVED BY:

REIMBURSABLE



**FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT**

JOB NO. <b>7177</b>	DATE <b>3-26-79</b>	SHEET NO. <b>2 of 2</b>	SHIPPING ADDRESS: <b>PULLMAN POWER PRODUCTS</b> <b>c/o Pacific Gas &amp; Electric Company</b> <b>Diablo Canyon Power Plant</b> <b>7 Miles North of Avila Beach, CA 93424</b>	REC. - P.O. - R.R. -	NO. F- <b>7177- 7523</b>
DISCOUNT TERMS		SHIPPING TERMS		JOB COST CODE: <b>121</b>	SUBCONTRACT NO.
VIA			VENDOR: <b>CARDINAL</b>	MAIL 4 COPIES OF INVOICES TO: <b>P. O. Box 367</b> <b>Avila Beach, CA 93424</b>	
<div style="border: 2px solid black; transform: rotate(-45deg); padding: 5px; display: inline-block;"> NOTATION FOR INFORMATION </div>					
SPECIAL REQUIREMENTS FOR STRUCTURAL BOLTS OR FASTENERS FOR CIVIL STEEL					
CB2.	Supplier shall furnish three copies of Manufacturer's Test Reports.				
CB3.	Manufacturers' Test Reports shall be traceable to our Purchase Order and Item No.				
CB4.	All required documentation shall be sent the day of each shipment to PULLMAN POWER PRODUCTS, P.O. Box 367, Avila Beach, CA 93424 Attn: Q.A. Dept. In addition a copy shall accompany each shipment.				
CB5.	Any nonconformance to the requirements of the Purchase Order will be considered just cause for return of materials without cost to buyer.				
CB6.	Materials shall be domestically manufactured.				
CB7.	Lot number shall be entered on containers and Mill Test Reports. The Heat or Heat Code Number shall be marked or tagged on each bundle.				

NEEDED FOR:			REMARKS	RECEIVING DEPARTMENT	
DATE NEEDED:	DATE ORDERED:	DATE PROMISED:		CARRIER:	
DWG(S) ATTACHED:				COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>	
PREPARED BY:	APPROVED BY:	PURCHASED BY:		PREPAID: \$	COLLECT: \$
<b>IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.</b>				RECEIVED BY:	
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING,			DEFERRIBLE		

DR 5739



PRODUCT ENGINEERING DEPARTMENT  
QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

	Req'd	Approved by Customer	Verified by M. W. K. Q. C.
Quality Assurance Program - Section III	✓		<i>DM</i>
Revised Drawings for Approval			
Revised Procedures for Approval			
Welding			
Weld Repairs			
Heat Treatment			
Ultrasonic			
Radiograph			
Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
4. Documentation			
a. Mill Reports	✓		<i>DM</i>
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section.			
j. NDT Personnel Qualifications			
k. Manufacturers C of C			
5. Marking per M. W. K. Standard	✓		<i>DM</i>

CARDINAL  
PO# 7177-7523

PREPARED BY

DATE OF ISSUE

PAGE

DR 5739

3/29/79

OF



PRODUCT ENGINEERING DEPARTMENT  
QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

	Req'd	Approved by Customer	Verified by M. W. K. Q. C.
1. Vendor Quality Assurance Program - ASME Section III	✓		<i>[Signature]</i>
2. Certified Drawings for Approval			
3. Qualified Procedures for Approval			
a. Welding			
b. Weld Repairs			
c. Heat Treatment			
d. Ultrasonic			
e. Radiograph			
f. Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
4. Documentation			
a. Mill Reports	✓		<i>[Signature]</i>
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section.			
j. NDT Personnel Qualifications			
k. Manufacturers C of C			
5. Marking per M. W. K. Standard	✓		<i>[Signature]</i>

FOR INFORMATION  
ONLY

CARDINAL  
PO#7177-7523

EXHIBIT 4

INTEROFFICE CORRESPONDENCE

*Dist. TPA QC Insp*

DATE MAY 31, 1984  
 TO DISTRIBUTION  
 FROM H. KARNER  
 SUBJECT ACCEPTABLE STUD MATERIALS FOR CARBON STEEL WELDING (REF: DR 5891)

DR 5891 identified cases where A-490 and A-193-B7 stud materials, which are not listed in ASME Section IX or AWS D1.1, were welded with a carbon steel welding procedure qualified for welding ASME P-1 materials and D1.1 prequalified materials only.

To prevent recurrence of this discrepancy, only the following stud materials shall be considered acceptable for welding with carbon steel welding procedures:

- 1) A-36 bar stock
- 2) Nelson studs
- 3) A-307 Gr B studs (A-307 bolts with the heads removed are NOT acceptable).

All other stud materials will require written QA/QC approval prior to welding with a carbon steel WPS.

*Harold W. Karner*

Harold W. Karner  
 QA/QC Manager

HWK:CN:sam

Distribution:

<u>QC</u>	<u>QA</u>	<u>Engineering-Piping/</u>
Engler	Cochrane	<u>Hangers/Rupture Restraints</u>
Charboneau	Prewitt	Kapsalis
Neary	Kimmel	Cornish
Clark	McJilton	<u>Superintendents-General Foremen</u>
J. Watson	Hosman	
Holle	McGregor	
		Mokry

~~All individuals on distribution shall sign, date and return a copy of this memorandum upon receipt.~~

Signature

Date



# COPY

## PACIFIC GAS AND ELECTRIC COMPANY

PG&E

77 BEALE STREET, SAN FRANCISCO, CALIFORNIA 94106

TELEPHONE (415) 781-4211

July 5, 1984

Thomas S. Moore, Esq., Chairman  
Dr. John H. Buck  
Dr. W. Reed Johnson  
Atomic Safety and Licensing Appeal Board  
U. S. Nuclear Regulatory Commission  
4350 East-West Highway  
East-West Tower, 5th Floor  
Bethesda, MD 20814

EXHIBITS

Re: Docket No. 50-275, OL-DPR-76  
Docket No. 50-323  
Diablo Canyon Units 1 and 2  
Response to Footnote 21 of Memorandum and Order  
Dated June 28, 1984 (ALAB-775)

Gentlemen:

In response to footnote 21 of the decision of the Appeal Board dated June 28, 1984 (ALAB-775), the Affidavit of W. W. Karner is enclosed. As can be seen from the Affidavit, the prior responses of applicant to allegations concerning the use of #307 material remain true and correct.

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

Very truly yours,

ORIGINAL SIGNED BY

Dan G. Lubbock

Enclosure

cc: Service List

8407160305

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of )

PACIFIC GAS AND ELECTRIC )  
COMPANY )

(Diablo Canyon Nuclear Power )  
Plant, Units 1 and 2) )

Docket Nos. 50-275  
50-323

AFFIDAVIT OF H. W. KARNER

STATE OF CALIFORNIA )

CITY AND COUNTY OF SAN FRANCISCO )

ss.

The above, being duly sworn, deposes and says:

My name is Harold W. Karner. I am employed by Pullman Power Products as Manager, Quality Assurance/Quality Control, at Diablo Canyon Power Plant. On May 31, 1984, I issued an interoffice memorandum to all Pullman QA/QC inspectors onsite which stated, inter alia, that "A-307 bolts with the heads removed are NOT acceptable." My intention when issuing the memo was not to imply that the prior use of A-307 bolts as studs was technically unacceptable, but merely to procedurally stop a practice which had evoked enough controversy that its continuation was not deemed desirable. The memo was written to specifically address DR-5892, which referenced A-490 and A-193-B7 studs, and to provide additional controls on the type of carbon steel stud material which can be welded without extra case-by-case authorization.

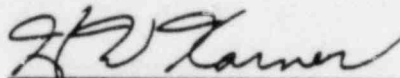
8407160307

The May 31, 1984 memo does not in any way alter the position taken in PGandE's Response to Joint Intervenor's Motion to Reopen the Record on the Issue of Construction Quality Assurance, Attachment C, pages 12-13. A-307 Grade B bolts/studs are weldable and have been properly welded and meet all specification and code requirements for weldability, chemical composition, strength, and traceability.

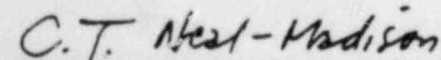
There was no technical reason why I included the statement regarding the use of A-307 Grade B bolts as studs. I only meant that from that date forward, Pullman welders could no longer make A-307 Grade B studs from A-307 Grade B bolts without prior QA/QC approval.

I have read the preceding two pages and the information outlined therein is true and accurate to the best of my knowledge.

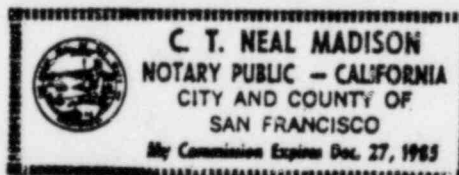
Dated: July 5, 1984

  
H. W. Karner

Subscribed and sworn to  
before me this 5th day  
of July, 1984



Cynthia Neal-Madison  
Notary Public in and for the  
City and County of San Francisco  
State of California  
My commission expires  
December 27, 1985





Designation: A 307 - 82a

EXHIBIT 6

# Standard Specification for CARBON STEEL EXTERNALLY THREADED STANDARD FASTENERS<sup>1</sup>

This standard is issued under the fixed designation A 307; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last revision. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers the chemical and mechanical requirements of two grades of carbon steel externally threaded standard fasteners, in sizes  $\frac{1}{4}$  in. (6.35 mm) through 4 in. (101.6 mm). This specification does not cover requirements for externally threaded fasteners having heads with slotted or recessed drives or for mechanical expansion anchors. The fasteners covered by this specification are frequently used for the following applications:

- 1.1.1 *Grade A Bolts* for general applications, and
- 1.1.2 *Grade B Bolts*, for flanged joints in piping systems where one or both flanges are cast iron.
- 1.2 If no grade is specified in the inquiry, contract, or order, Grade A bolts shall be furnished.
- 1.3 Nonheaded anchor bolts, either straight or bent, to be used for structural anchorage purposes, shall conform to the requirements of Specification A 306 with tension tests to be made on the bolt body or on the bar stock used for making the anchor bolt.
- 1.4 Suitable nuts are covered in Specification A 563. Unless otherwise specified, the grade and style of nut for each grade of fastener, of all surface finishes, shall be as follows:

Fastener Grade and Size		Nut Grade and Style <sup>2</sup>
A, $\frac{1}{4}$ to 1 in.	A, hex	A, hex
A, over 1 to 4 in.	A, hex	A, heavy hex
B, $\frac{1}{4}$ to 4 in.	A, heavy hex	A, heavy hex

<sup>1</sup> Nuts of other grades and styles having specified proof load stresses (Specification A 563, Table 1) greater than the specified grade and style of nut are also suitable.

1.5 The values stated in inch-pound units are to be regarded as the standard.

1.6 Supplementary Requirement S1 of an

optional nature is provided, which describes additional restrictions to be applied when bolts are to be welded. It shall apply only when specified in the inquiry, order, and contract.

## 2. Applicable Documents

- 2.1 *ASTM Standards:*
  - A 36 Specification for Structural Steel
  - A 153 Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
  - A 370 Methods and Definitions for Mechanical Testing of Steel Products
  - A 563 Specification for Carbon and Alloy Steel Nuts
  - A 706 Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement
  - A 751 Methods, Practices, and Definitions for Chemical Analysis of Steel Products
  - B 454 Specification for Mechanically Deposited Coatings of Cadmium and Zinc on Ferrous Metals
- 2.2 *American National Standards*<sup>3</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F-16 on Fasteners and is the direct responsibility of Subcommittee F-16.02 on Steel Bolting.

Current edition approved May 29 and Aug. 27, 1982. Published October 1982. Originally published as A 307-47T. Last previous edition A 307-80.

<sup>2</sup> For ASME Boiler and Pressure Vessel Code applications see related Specification A 307 in Section II of that Code.

<sup>3</sup> 1983 Annual Book of ASTM Standards, Vol. 01.04.

<sup>4</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>5</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>6</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>7</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>8</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>9</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>10</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>11</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>12</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>13</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>14</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>15</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>16</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

<sup>17</sup> 1983 Annual Book of ASTM Standards, Vol. 01.03.

ANSI B1.1 Unified Screw Threads  
ANSI B18.2.1 Square and Hex Bolts and Screws

## 3. Ordering Information

3.1 Orders for externally threaded fasteners (including nuts and accessories) under this specification shall include the following:

- 3.1.1 ASTM designation and date of issue,
- 3.1.2 Name of product, that is, hex or heavy hex.

3.1.3 Grade, that is, A or B (If no grade is specified, Grade A bolts are furnished).

3.1.4 Quantities (number of pieces by size including nuts).

3.1.5 Fastener size and length.

3.1.6 *Washers*—Quantity and size (separate from bolts).

3.1.7 *Galvanizing*—Specify hot dip, mechanical (4.4) or other finish required.

3.1.8 Specify if inspection at point of manufacture is required.

3.1.9 Specify if certified test report is required (see 9.2), and

3.1.10 Specify additional testing (9.3) or special requirements.

## 4. Materials and Manufacture

4.1 Steel for bolts shall be made by the open-hearth, basic-oxygen, or electric-furnace processes.

4.2 Bolts may be produced by hot or cold forging of the heads or machining from bar stock.

4.3 Bolt threads may be rolled or cut.

4.4 When specified, galvanized bolts shall be hot-dip zinc coated in accordance with the requirements of Class A of Specification A 153. When specified by the purchaser to be mechanically galvanized, bolts covered by this specification shall be mechanically zinc coated and the coating and coated fasteners shall conform to the requirements for Class 50 of Specification B 454, or to the coating thickness, adherence, and quality requirements for Class C of Specification A 153.

5.1 Steel shall conform to the following chemical requirements:

5.1.1 Steel shall conform to the following chemical requirements:

5.1.2 Steel shall conform to the following chemical requirements:

5.1.3 Steel shall conform to the following chemical requirements:

5.1.4 Steel shall conform to the following chemical requirements:

5.1.5 Steel shall conform to the following chemical requirements:

5.1.6 Steel shall conform to the following chemical requirements:

5.1.7 Steel shall conform to the following chemical requirements:



A 307

- 5.2 Resultant material is not subject to rejection based on product analysis for sulfur.
- 5.3 Bolts are customarily furnished from stock, in which case individual heats of steel cannot be identified.
- 5.4 Application of heats of steel to which bismuth, selenium, tellurium, or lead has been intentionally added shall not be permitted for Grade B bolts.
- 5.5 Chemical analyses shall be performed in accordance with Methods A 751.

## 6. Mechanical Requirements

6.1 Bolts shall not exceed the maximum hardness required in Table 1. Bolts less than three diameters in length, or bolts with drilled or undersize heads shall have hardness values not less than the minimum nor more than the maximum hardness limits required in Table 1, as hardness is the only requirement.

6.2 Bolts  $\frac{1}{4}$  in. in diameter or less, other than those excepted in 6.1, shall be tested full size and shall conform to the requirements for tensile strength specified in Table 2.

6.3 Bolts larger than  $\frac{1}{4}$  in. in diameter, other than those excepted in 5.1, shall preferably be tested full size and when so tested, shall conform to the requirements for tensile strength specified in Table 2. When equipment of sufficient capacity for full size bolt testing is not available or when the length of the bolt makes full-size testing impractical, machined specimens shall be tested and shall conform to the requirements shown below.

Grade A and Grade B bolts (100 to 150 mm)	Tensile Strength, ksi (MPa)	Elongation in 2 in. (or 50 mm), %	18 mm
			18 mm
Grade A bolts only	60 (415) min	18 (1.0) min	18 mm

In the event that bolts are tested by both full size and by machine test specimen methods, the full-size test shall govern if a controversy between the two methods exists.

6.4 For bolts on which both hardness and tension tests are performed, acceptance based on tensile requirements shall take precedence in the event that there is controversy over low readings of hardness tests.

## 7. Dimensions

7.1 Unless otherwise specified, threads shall be the Coarse Thread Series as specified in the latest revision of ANSI B1.1, having a Class 2A tolerance.



7.2 Unless otherwise specified, Grade A bolts shall be hex bolts with dimensions as given in the latest issue of ANSI B 18.2.1. Unless otherwise specified, Grade B bolts shall be heavy hex bolts with dimensions as given in the latest issue of ANSI B 18.2.1.

7.3 Unless otherwise specified, bolts to be used with nuts or tapped holes which have been tapped oversize, in accordance with Specification A 563, shall have Class 2A threads before hot dip or mechanical galvanizing. After galvanizing, the maximum limit of pitch and major diameter may exceed the Class 2A limit by the following amount:

Diameter, in.	Oversize Limit, in. (mm)*
Up to 7/16, incl.	0.016 (0.41)
Over 7/16 to 1, incl.	0.021 (0.53)
Over 1	0.031 (0.79)

\* These values are the same as the minimum overlapping required for galvanized nuts in Specification A 563.

7.4 The gaging limit for bolts shall be verified during manufacture or use by assembly of a nut tapped as nearly as practical to the amount oversize shown above. In case of dispute, a calibrated thread ring gage of that same size (Class X tolerance, gage tolerance plus) shall be used. Assembly of the gage, or the nut described above, must be possible with hand effort following application of light machine oil to prevent galling and damage to the gage. These inspections, when performed to resolve disputes, shall be performed at the frequency and quality described in Table 3.

## 8. Test Methods

8.1 The material shall be tested in accordance with Supplement III of Methods A 370.

8.2 Standard square and hex head bolts only shall be tested by the wedge tension method except as noted in 6.1. Fracture shall be in the body or threads of the bolt without any fracture at the junction of the head and body. Other headed bolts shall be tested by the axial tension method.

8.3 Speed of testing as determined with a free running crosshead shall be a maximum of 1 in. (25.4 mm)/min for the tensile strength tests of bolts.

## 9. Number of Tests and Retests

9.1 The requirements of this specification shall be met in continuous mass production for

stock, and the manufacturer shall make sample inspections to ensure that the product conforms to the specified requirements. Additional tests of individual shipments of material are not ordinarily contemplated. Individual heats of steel are not identified in the finished product.

9.2 When specified in the order, the manufacturer shall furnish a test report certified to be the last completed set of mechanical tests for each stock size in each shipment.

9.3 When additional tests are specified on the purchase order, a lot, for purposes of selecting test samples, shall consist of all material offered for inspection at one time that has the following common characteristics:

9.3.1 One type of item.

9.3.2 One nominal size, and

9.3.3 One nominal length of bolts.

9.4 From each lot, the number of tests for each requirement shall be as follows:

Number of Pieces in Lot	Number of Samples
800 and under	1
801 to 8,000	2
8,001 to 22,000	3
Over 22,000	4

9.5 If any machined test specimen shows defective machining it may be discarded and another specimen substituted.

9.6 Should any sample fail to meet the requirements of a specified test, double the number of samples from the same lot shall be tested, in which case all of the additional samples shall meet the specification.

## 10. Marking

10.1 Bolt heads shall be marked (by raised or depressed mark at the option of the manufacturer) to identify the manufacturer. The manufacturer may use additional marking for his own use.

## 11. Inspection

11.1 If the inspection described in 11.2 is required by the purchaser it shall be specified in the inquiry, order, or contract.

11.2 The inspector representing the purchaser shall have free entry to all parts of the manufacturer's works that concern the manufacture of the material ordered. The manufacturer shall afford the inspector all reasonable facilities to satisfy him that the material is being

furnished in accordance with this specification. All tests and inspections required by the specification that are requested by the purchaser's representative shall be made before shipment, and shall be conducted as not to interfere unnecessarily with the operation of the works.

## SUPPLEMENTARY REQUIREMENT

The following supplementary requirement shall apply only when specified in the purchase order or contract:

### S1. Bolts Suitable for Welding

S1.1 The material described in this section is intended for welding. This supplemental section, by additional chemical composition restrictions and by a carbon equivalent formula, provides assurance of weldability by chemical composition control.

S1.2 Welding technique is of fundamental importance when bolts produced to this supplementary section are welded. It is presupposed that suitable welding procedures for the steel being welded and the intended service will be selected.

S1.3 All of the requirements of this supplemental section apply in addition to all of the chemical, mechanical, and other requirements of the base specification, A 307 for Grade B.

S1.4 Because of the embrittling effects of welding temperatures on cold-forged steel, this supplemental section is limited to hot-forged bolts, or, if not forged, then to bolts produced from hot-rolled bars without forging or threaded bars, bars studs, or stud bolts produced from hot-rolled bars without forging. Cold-forged bolts, or cold-drawn threaded bars, if they are given a thermal treatment by heating to a temperature of not less than 1500° F (815°C) and air-cooled are also suitable.

#### S1.5 Chemical Requirements:

S1.5.1 Heat Chemical Analysis—Material conforming to the following additional analysis limitations shall be used to manufacture the

## 12. Rejection

12.1 Unless otherwise specified, any rejection based on tests specified herein shall be reported to the manufacturer within 30 working days from the receipt of samples by the purchaser.

product described in this supplementary requirement.

Carbon	0.30 % max
Manganese	1.00 % max
Phosphorus	0.04 % max
Sulfur	0.05 % max
Silicon	0.50 % max

S1.5.2 Carbon Equivalent (Source—ASTM Specification A 706)—In addition to the heat chemical analysis requirements in S1.5.1, the heat analysis shall be such as to provide a carbon equivalent (CE) not exceeding 0.55 when calculated as follows:

$$CE = \%C + \frac{\%Mn}{6} + \frac{\%Cu}{40} + \frac{\%Ni}{20} + \frac{\%Cr}{10} + \frac{\%Mo}{50} + \frac{\%V}{10}$$

S1.6 Analysis Reports—If requested on the order or contract, the chemical composition of each heat of steel used and the calculated carbon equivalent for each heat shall be reported to the purchaser.

S1.7 Product (Check) Verification Analysis—A Chemical analysis may be made by the purchaser or his representative from bolts selected from each heat of steel. The analysis thus determined shall not exceed the values specified in S1.5.2 by more than the following amounts.

Carbon	+0.03
Manganese	+0.06
Phosphorus	+0.005
Sulfur	+0.005
Silicon	+0.05



Designation: A 320 - 82

TABLE 3 Sample Sizes and Acceptance Numbers for Inspection of Hot Dip or Mechanically Galvanized Threads

Lot Size	Sample Size <sup>a</sup>	Acceptance Number <sup>a</sup>
2 to 90	13	1
91 to 150	20	2
151 to 280	32	3
281 to 500	50	5
501 to 1 200	80	7
1 201 to 3 200	125	10
3 201 to 10 000	200	14
10 001 and over	315	21

<sup>a</sup> Sample sizes of acceptance numbers are extracted from "Single Sampling Plan for Normal Inspection," Table II-A, MIL-STD-105D.

<sup>b</sup> Inspect all bolts in the lot if the lot size is less than the sample size.

TABLE 1 Hardness Requirements for Bolts

Bolt Size, in.	Grade	Brinell		Rockwell B	
		min	max	min	max
All	A	121	241 <sup>a</sup>	69	100 <sup>a</sup>
	B	121	212	69	95

<sup>a</sup> Except when tested by wedge tension test.

TABLE 2 Tensile Requirements for Full-Size Bolts

Bolt Size, in.	Threads per inch	Stress Area <sup>a</sup> , in. <sup>2</sup>	Tensile Strength, lb/in. <sup>2</sup>		Grade
			A and B, min	B only, max <sup>b</sup>	
1/4	20	0.0318	1 900	3 180	1
5/16	18	0.0524	3 100	5 240	2
3/8	16	0.0775	4 650	7 750	3
1/2	14	0.1063	6 350	10 630	4
5/8	13	0.1419	8 500	14 190	5
3/4	12	0.182	11 000	18 200	6
7/8	11	0.226	13 500	22 600	7
1	10	0.334	20 050	33 400	8
1 1/8	9	0.462	27 700	46 200	9
1 1/4	8	0.606	36 350	60 600	10
1 3/8	7	0.763	45 900	76 300	11
1 1/2	6	1.035	62 500	103 500	12
1 3/4	5	1.405	84 500	140 500	13
2	4 1/2	2.50	150 000	250 000	14
2 1/4	4	3.25	195 000	325 000	15
2 3/4	4	4.16	250 000	416 000	16
3	4	5.17	295 000	495 000	17
3 1/2	4	6.47	358 200	597 000	18
4	4	8.11	426 000	710 000	19
4 1/2	4	10.0	499 500	833 000	20
5	4	12.3	579 500	976 500	21
5 1/2	4	15.0	667 500	1 100 000	22

<sup>a</sup> Area calculated from the 1 thread.

$$A = 0.7854 D_n (n + 0.47) \text{ in.}^2$$

where

$D_n$  = nominal diameter of bolt and

$n$  = threads per inch

$$n = 1.914 - 4.448 S$$

<sup>b</sup> Based on 60,000 psi (414 MPa)

<sup>c</sup> Based on 100,000 psi (68.9 MPa)

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are advised that any patent rights asserted in connection with any item mentioned in this standard may be liable for infringement.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised either reapproved or withdrawn. Users of this standard are advised that any patent rights asserted in connection with any item mentioned in this standard may be liable for infringement.

## Standard Specification for ALLOY STEEL BOLTING MATERIALS FOR LOW- TEMPERATURE SERVICE<sup>1</sup>

This standard is issued under the fixed designation A 320; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last revision. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This specification has been approved for use by agencies of the Department of Defense and for listing in the DoD Index of Specifications and Standards.

### 1. Scope

1.1 This specification covers alloy steel bolting materials for pressure vessels, valves, flanges, and fittings for low-temperature service. The term "bolting material" as used in this specification covers rolled, forged or strain hardened bars, bolts, screws, studs, and stud bolts. The bars shall be hot-wrought. The material may be further processed by centerless grinding or by cold drawing. Austenitic stainless steel may be solution annealed or annealed and strain-hardened.

1.2 Several grades are covered, including both ferritic and austenitic steels designated 17, B8, etc. Selection will depend on design, service conditions, mechanical properties, and low-temperature characteristics.

NOTE 1: The committee formulating this specification has included several grades of material that have been rather extensively used for the present purpose. Other compositions will be considered for inclusion by the committee from time to time as the need becomes apparent. Users should note that hardenability of some of the grades mentioned may restrict the maximum size at which the required mechanical properties are obtainable.

1.3 Nuts for use with this bolting material are covered in Section 9.

1.4 Supplementary Requirement S1 of an optional nature is provided. It shall apply only when specified in the inquiry, contract and order.

1.5 The values stated in inch-pound units are to be regarded as the standard.

### 2. Applicable Documents

- 2.1 *ASTM Standards*  
A 29 Specification for General Requirements

for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished<sup>2</sup>

A 194 Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service<sup>3</sup>

A 276 Specification for Stainless and Heat-Resisting Steel Bars and Shapes<sup>3</sup>

A 325 Specification for High-Strength Bolts for Structural Joints<sup>4</sup>

A 370 Methods and Definitions for Mechanical Testing of Steel Products<sup>5</sup>

2.2 *American National Standards Institute Standards*<sup>6</sup>

B18.2.1 Square and Hex Bolts and Screws

B18.3 Hexagon Socket and Spline Socket Screws

B18.22.1 Plain Washers

### 3. Ordering Information

3.1 The inquiry and order for material under this specification shall include the following as required to describe the material adequately.

3.1.1 ASTM Designation A 320 latest issue, and analysis by grade as selected from Table 1.

3.1.2 Minimum mechanical properties re-

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee A 1 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.22 on Valves and Fittings.

Current edition approved July 30, 1982. Published September 1982. Originally published as A 320-48T. Last previous edition A 320-81.

<sup>2</sup> For ASME Boiler and Pressure Vessel Code applications, see related Specification SA-320 in Section II of that Code.

<sup>3</sup> 1983 Annual Book of ASTM Standards, Vol 01.05.

<sup>4</sup> 1983 Annual Book of ASTM Standards, Vol 01.01.

<sup>5</sup> 1983 Annual Book of ASTM Standards, Vol 01.04.

<sup>6</sup> Available from American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

EX. 7 pg. 3 of 3

617

DOCKETED  
US NRC

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

64 JUN 29 AM 127  
ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman  
Dr. John H. Buck  
Dr. W. Reed Johnson

June 28, 1984  
(ALAB-775)

In the Matter of )

PACIFIC GAS AND ELECTRIC COMPANY )

(Diablo Canyon Nuclear Power )  
Plant, Units 1 and 2) )

) Docket Nos. 50-275 OL  
) 50-323 OL

Joel R. Reynolds, John R. Phillips and Eric Havian, Los Angeles, California, and David S. Fleischaker, Oklahoma City, Oklahoma, for the San Luis Obispo Mothers for Peace, et al., joint intervenors.

Robert Ohlback, Philip A. Crane, Jr., Richard F. Locke and Dan G. Lubbock, San Francisco, California, and Arthur C. Gehr, Bruce Norton and Thomas A. Scarduzio, Jr., Phoenix, Arizona, for Pacific Gas and Electric Company, applicant.

Joseph Rutberg, Henry J. McGurren and Lawrence J. Chandler, for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

1. On March 20, 1984, we issued ALAB-763 containing our findings of fact and conclusions of law with respect to the adequacy of the applicant's current design quality assurance program and the sufficiency of its design verification efforts to establish the efficacy of the design

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of the Diablo Canyon facility.<sup>1</sup> The operating license proceeding had been reopened on the motion of the joint intervenors,<sup>2</sup> and the trial of the issues involved consumed fifteen hearing days. In ALAB-763, we concluded that

[t]he applicant's verification efforts provide adequate confidence that the Unit 1 safety-related structures, systems and components are designed to perform satisfactorily in service and that any significant design deficiencies in that facility resulting from defects in the applicant's design quality assurance program have been remedied. Accordingly, we conclude that there is reasonable assurance that the facility can be operated without endangering the health and safety of the public. As a result, the license authorization previously granted . . . remains in effect. . . .<sup>3</sup>

Previously in ALAB-756, issued December 19, 1983,<sup>4</sup> we detailed the reasons underlying our earlier order denying, after four days of hearing, the joint intervenors' motion to reopen the record on the issue of the asserted inadequacy of the applicant's construction quality assurance program.<sup>5</sup> In denying that motion, we found that the joint intervenors had

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<sup>1</sup> 19 NRC \_\_\_\_.

<sup>2</sup> In addition, the Governor of California filed a motion to reopen the record on the issue of the adequacy of the applicant's design quality assurance program and that motion was also granted.

<sup>3</sup> 19 NRC at \_\_\_\_ (slip opinion at 101).

<sup>4</sup> 18 NRC 1340.

<sup>5</sup> See Order of October 24, 1983 (unpublished).



failed to present new evidence of a significant safety issue.<sup>6</sup>

We now have before us two additional motions of the joint intervenors to reopen the record in the Diablo Canyon operating license proceeding. The first, filed February 14, 1984, again seeks to reopen on the issue of the adequacy of the applicant's design quality assurance program.<sup>7</sup> The second, filed February 22, 1984, seeks to reopen on the issues of the adequacy of the applicant's construction quality assurance program and the applicant's character and competence. Both motions are accompanied by the affidavits

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<sup>6</sup> ALAB-756, supra, 18 NRC at 1354-55.

<sup>7</sup> The joint intervenors' motion is phrased in the alternative. They first endeavor to augment the evidentiary hearing record of the reopened design quality assurance proceeding with the materials accompanying the motion. Alternatively, they seek to reopen the record for further hearing. The joint intervenors attempt to augment the hearing record based on a colloquy between applicant's counsel and us at the end of the evidentiary hearing concerning the formal closing of the record. See Tr. D-3246. They have misapprehended the import of those remarks. Our comment was intended to accommodate, as a matter of administrative convenience, such matters as a party's belated motion to admit an exhibit that had been marked for identification at trial but, through an oversight, had not been moved into evidence. We did not (and could not properly) provide for the wholesale augmentation of the evidentiary record now sought by the joint intervenors. Supplementing the record with the materials proffered by the joint intervenors would require, at a minimum, the consent of all parties. Accordingly, the motion to augment the record is denied and we shall treat the motion solely as one to reopen the record.

of several individuals currently working, or previously employed, at the Diablo Canyon facility. The affidavits and supplementary documentary exhibits fill hundreds of pages and set forth, by the joint intervenors' count, some 200 charges of purported inadequacies in the design, construction, or quality assurance practices at the plant. Further, the joint intervenors supplemented each reopening motion with additional material after the motions were filed.<sup>8</sup>

The applicant and the NRC staff filed lengthy responses opposing both reopening motions.<sup>9</sup> The responses contain numerous detailed affidavits and voluminous documentary materials addressing the allegations in the joint intervenors' filings. Thereafter, the joint intervenors

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<sup>8</sup> See Joint Intervenors' Supplement To February 14, 1984 Motion To Augment Or, In the Alternative, To Reopen The Record (March 1, 1984); Joint Intervenors' Supplement To February 22, 1984 Motion To Reopen The Record On The Issues Of Construction Quality Assurance And Licensee Character And Competence (March 3, 1984).

<sup>9</sup> See Pacific Gas And Electric Company's Answer In Opposition To Joint Intervenors' Motion To Augment Or, In The Alternative, To Reopen The Record (March 6, 1984); NRC Staff's Answer To Joint Intervenors' Motion To Augment Or, In The Alternative, To Reopen The Record (March 15, 1984); Pacific Gas And Electric Company's Answer In Opposition To Joint Intervenors' Motion To Reopen The Record On The Issue of Construction Quality Assurance And Licensee Character And Competence (March 19, 1984); NRC Staff's Answer To Joint Intervenors' Motion To Reopen The Record On Construction Quality Assurance And Licensee Character And Competence (April 11, 1984).

filed a reply to the applicant's response to the motion concerning design quality assurance,<sup>10</sup> and then filed a second supplement to that motion<sup>11</sup> to which both the applicant and the staff responded.<sup>12</sup> By order of May 23, 1984, we provided the joint intervenors with an opportunity to reply to the applicant's and the staff's final responses to both motions.<sup>13</sup> The order stated that any reply must be accompanied by the affidavits of qualified individuals and clearly establish, for the matters raised by the joint intervenors' filings, why the responses of the applicant and the staff are insufficient. It also indicated that the joint intervenors must demonstrate the significance to plant safety of their assertions as well as identify each remaining issue of disputed material fact with regard to

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<sup>10</sup> See Joint Intervenors' Reply To Answer Of Pacific Gas And Electric Company To Motion To Augment Or, In The Alternative, To Reopen The Record (March 15, 1984).

<sup>11</sup> See Joint Intervenors' Supplement To Motion To Augment Or, In The Alternative, To Reopen The Record (April 6, 1984).

<sup>12</sup> See Answer Of Pacific Gas And Electric Company To Joint Intervenors' Supplement To Motion To Augment Or, In The Alternative, To Reopen The Record (April 23, 1984); NRC Staff Response To Joint Intervenors' Supplement To Motion To Augment, Or In The Alternative, To Reopen The Record (April 25, 1984).

<sup>13</sup> See Order of May 23, 1984 (unpublished).

their charges. The joint intervenors filed their reply on June 12.

2. Our earlier decision denying joint intervenors' motion to reopen the record on the issue of the adequacy of the applicant's construction quality assurance program reiterated the three-pronged standard the proponent of a reopening motion must satisfy:

"[t]he motion must be both timely and addressed to a significant safety or environmental issue. Vermont Yankee Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973); . . . Georgia Power Co. (Alvin W. Vogtle Nuclear Plant, Units 1 and 2), ALAB-291, 2 NRC 404, 409 (1975). Beyond that, it must be established that 'a different result would have been reached initially had [the material submitted in support of the motion] been considered.' Northern Indiana Public Service Co. (Bailly Generating Station, Nuclear-1), ALAB-227, 8 AEC 416, 418 (1974)."<sup>14</sup>

We previously have held that, for a reopening motion to be timely presented, the movant must show that the issue sought to be raised could not have been raised earlier.<sup>15</sup> In ALAB-756, we highlighted what constitutes a "significant safety issue" for motions predicated on asserted deficiencies in a construction quality assurance program. We stated there that

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<sup>14</sup> ALAB-756, supra, 18 NRC at 1344.

<sup>15</sup> Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973). See Detroit Edison Co. (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-707, 16 NRC 1760, 1764-65 (1982).



perfection in plant construction and the facility quality assurance program is not a precondition for a license under either the Atomic Energy Act or the Commission's regulations. What is required instead is reasonable assurance that the plant, as built, can and will be operated without endangering the public health and safety. . . .

. . . In order for new evidence to raise a "significant safety issue" for purposes of reopening the record, it must establish either that uncorrected. . . errors endanger safe plant operation, or that there has been a breakdown of the quality assurance program sufficient to raise legitimate doubt as to the plant's capability of being operated safely. . . .<sup>16</sup>

Although the focus of ALAB-756 was a motion to reopen on the issue of construction quality assurance, what we said there is equally applicable to reopening motions directed to the issue of design quality assurance.

Further, the Commission has emphasized in this very proceeding that the proponent of a reopening motion must present "'significant new evidence . . . that materially affects the decision,'" not "bare allegations or simple submission of new contentions."<sup>17</sup> At a minimum, therefore, the new material in support of a motion to reopen must be set forth with a degree of particularity in excess of the basis and specificity requirements contained in 10 CFR 2.714(b) for admissible contentions. Such supporting

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<sup>16</sup> ALAB-756, supra, 18 NRC at 1344 (citations omitted).

<sup>17</sup> CLI-81-5, 13 NRC 361, 362-63 (1981).

information must be more than mere allegations; it must be tantamount to evidence. And, if such evidence is to affect materially the previous decision (as required by the Commission), it must possess the attributes set forth in 10 CFR 2.743(c) defining admissible evidence for adjudicatory proceedings. Specifically, the new evidence supporting the motion must be "relevant, material, and reliable."<sup>18</sup>

The joint intervenors' new motions to reopen on the issues of the adequacy of the applicant's design and construction quality assurance programs, like their earlier motion denied in ALAB-756, fail to meet these standards. We

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<sup>18</sup> In other words, only facts raising a significant safety issue, not conjecture or speculation, can support a reopening motion. The facts must be relevant to the proposition they support, and probative of the safety issue presented. General statements are of no value. Similarly, although hearsay may be admissible in NRC proceedings, it must be shown to be reliable if it is to be considered as support for the motion.

Also embodied in the reliability requirement of 10 CFR 2.743(c) is the notion that evidence presented in affidavit form must be given by competent individuals with knowledge of the facts or experts in the disciplines appropriate to the issues raised. Because the competence (or even the existence) of unidentified individuals is impossible to determine, statements of anonymous persons -- so-called anonymous affidavits -- cannot be considered as evidence to support a motion. For adjudicatory proceedings, in camera filings and requests for protective orders are available in appropriate circumstances to protect the legitimate interests of a party or other person. This situation should be contrasted to the staff's responsibilities outside the adjudicatory arena where even anonymous charges receive attention. The staff has, in fact, investigated a vast number of such allegations with respect to Diablo Canyon.

have carefully examined each of the joint intervenors' charges with their supporting materials and the responses of the applicant and the staff. Our scrutiny of the motions leads us to conclude that the joint intervenors have failed to present new evidence of any significant safety issue that could have an effect on the outcome of the licensing proceeding.<sup>19</sup> Among other things, the movants have not presented evidence that establishes uncorrected design or construction errors that endanger safe plant operation. Nor have they demonstrated that there has been a breakdown of the applicant's quality assurance program that raises legitimate doubt that the facility can operate safely.<sup>20</sup>

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<sup>19</sup> The joint intervenors' reply to the applicant and staff responses filed pursuant to our May 23, 1984 order was accompanied by numerous supporting affidavits. Despite our instruction that the reply address why the responses of the applicant and staff are insufficient for "each matter raised . . . [or] asserted," the joint intervenors' reply "do[es] not individually address all of . . . the matters raised." Reply at 5. Further, in some instances, the reply raises entirely new issues. Although joint intervenors indicate that they had insufficient time to comply with our order, no request for an extension of time was filed. In any event, the joint intervenors concede that "few [of the noted] deficiencies will be demonstrably 'significant' if considered individually." Reply at 6. The movants are apparently content, therefore, to rely on the cumulative significance of the numerous purported deficiencies, none of which individually has been shown to be safety significant.

<sup>20</sup> For example, a number of the allegations focus on deficiencies in the methodology, practices, and quality assurance associated with the computer design of small bore (less than 2" diameter) pipe supports. The staff also found  
(Footnote Continued)

Moreover, our searching review of the motions reveals nothing that causes us to question the continuing validity of the conclusions we reached in ALAB-756 and ALAB-763 -- conclusions that followed extensive evidentiary explorations of construction and design quality assurance at Diablo Canyon. For these reasons, the motion to reopen on the issue of the applicant's design quality assurance program is denied and, with the reservation noted in the footnote below, the motion to reopen on the issue of the applicant's construction quality assurance program is also denied.<sup>21</sup>

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(Footnote Continued)

the number of errors occurring in this type of calculation to be higher than expected (NRC Staff's Answer To Joint Intervenor's Motion To Augment Or In the Alternative, To Reopen The Record (March 15, 1984), Knight Affidavit at 14). A staff imposed license condition required the applicant to redo all computer-based small bore pipe support calculations -- including additional physical effects not addressed in the original analyses. Transcript of May 9, 1984 Meeting between NRC staff and applicant at 15-23, 247. We note that the result of this program, with the reanalysis of all but 15 of 357 supports completed, shows that all of the supports meet design criteria, and no modifications are necessary. Letter from J. Schuyler to D. Eisenhut (June 11, 1984) (DCL-84-223), attachment at 1-5. Thus, errors in the small bore pipe support computer calculations, though numerous, have had no effect on the design adequacy of the supports.

<sup>21</sup> We reserve ruling on one matter raised by the joint intervenors' reopening motion on the issue of construction quality assurance until we receive further information from the applicant. In its February 22, 1984 motion at page 12, the joint intervenors charge that the applicant improperly used, as studs for the containment liner, A307 hardware bolts with the heads removed. According to an affidavit accompanying the applicant's response, the use of such bolts was permissible. Pacific Gas And Electric Company's Answer

(Footnote Continued)



As previously indicated, the number of diverse allegations of purported deficiencies contained in the joint intervenors' motions is very large. Even discounting the substantial repetition in the two motions, the affidavits and other documentary materials proffered as new evidence in support of the movants' charges are extensive.<sup>22</sup> When the

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(Footnote Continued)

In Opposition To Joint Intervenors' Motion To Reopen The Record On The Issue of Construction Quality Assurance And Licensee Character And Competence, supra note 9, Attachment C at 12-13. As an exhibit to their June 12, 1984 reply, the joint intervenors have attached a May 31, 1984 Pullman Power Products "Interoffice Correspondence" memorandum dealing with this issue. That memorandum is addressed to "Distribution" from "H. Karner" and concerns the subject of "Acceptable Stud Materials For Carbon Steel Welding (Ref: DR 5891)." The memorandum states, inter alia, that "(A-307 bolts with the heads removed are NOT acceptable)," and is signed by Harold W. Karner, QA/QC Manager.

The applicant shall inform us by July 6, 1984 why, in the words of the Pullman memorandum, A-307 bolts with the heads removed are not acceptable. The applicant's explanation shall be accompanied by appropriate affidavits of qualified experts and shall address the movants' charge, the applicant's prior response to that charge, and the recent Pullman memorandum.

<sup>22</sup> Not only does some of the same material accompany both motions, there is substantial repetition within the supporting materials accompanying each of the joint intervenors' motions. Additionally, the material purportedly supporting each motion is lumped together in a manner that lacks essential organization. Further, some of this material consists of anonymous statements. See note 18, supra. The movants have also included in their filings considerable material that is irrelevant and immaterial to many of their claims. Thus, the unorganized nature of the supporting material, combined with the massive amount of irrelevant matter in movants' filings, has made our task of

(Footnote Continued)

applicant and staff responses and supporting materials are added to the joint intervenors' filings, the papers run well over a thousand pages. Individual treatment of each of the movants' varied charges -- matters that do not readily lend themselves to being grouped together -- would consume many pages but have no practical precedential value. Such a decision would add little of consequence to the already expansive administrative record of this proceeding.

3. The joint intervenors' second reopening motion (dated February 22, 1984) also seeks to reopen the record on the issue of the applicant's "demonstrated lack of corporate character and competence . . . to manage and operate the Diablo Canyon project."<sup>23</sup> In support of this portion of their motion, the joint intervenors recite a number of instances of purported applicant misconduct dating from 1967 to mid-1983. They claim that these historical examples

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(Footnote Continued)  
analyzing joint intervenors' claims extremely time-consuming and difficult. Indeed, the very nature and manner of presentation of the joint intervenors' filings provide grounds for denying the motion. Rather than follow that course, we have painstakingly plowed through all of movants' papers. If we have missed some pertinent fact buried in the midst of their filings, the movants should not now be heard to complain: the movants failed to separate the wheat from the chaff and to present the material in an organized and persuasive manner.

<sup>23</sup> Joint Intervenors' Motion To Reopen The Record On The Issues Of Construction Quality Assurance And Licensee Character And Competence at 1.

demonstrate the applicant's deficient character and lack of competence to design, construct, and operate the facility.

To these historical examples, the joint intervenors add a lengthy list of alleged deficiencies in the applicant's design and construction quality assurance programs from their most recent motions to reopen the record. They argue that these new charges and supporting materials, combined with their previously recited historical evidence, in effect, create a pattern and practice of deficient character and incompetence on the part of the applicant that constitute significant new evidence to support reopening the record on this issue.

The joint intervenors' motion to reopen the record on the issue of the applicant's character and competence is denied. The movants' historical examples of alleged applicant misconduct are not timely presented. Moreover, the movants' new list of purported deficiencies fails to present evidence of a significant safety issue that could have an effect on the outcome of the proceeding.

The past incidents of alleged applicant misconduct relied upon by the joint intervenors occurred too long ago to be properly considered in a motion to reopen the record without a showing why this issue could not have been raised earlier. No such showing has even been attempted by the movants. Nor can the tardy presentation of these historical examples be saved by bootstrapping them to a series of more

recent charges. Indeed, all of the movants' examples are matters of public record and most of them have been used previously by the movants to support earlier reopening motions on other issues, or have been used already as evidence in the Diablo Canyon operating license proceeding.<sup>24</sup> Moreover, taken in proper context, none of these historical examples, singularly or in combination, establishes that the applicant's character and competence are insufficient to design, construct and operate the Diablo Canyon facility. Similarly, the joint intervenors' new charges of quality assurance program deficiencies do not establish that the applicant lacks the requisite character and competence to operate the plant. As we have already indicated, none of the new charges raises a significant safety issue.

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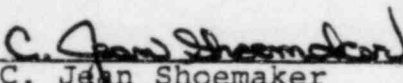
<sup>24</sup> Two of the major historical examples relied upon by the joint intervenors involve claims that the applicant failed to conduct adequate geological studies resulting in an improperly located Diablo Canyon facility, and the applicant's poor management practices and policies led to the alleged inadequate redesign of the facility. We note, however, that these items have been thoroughly aired in these proceedings. The early geologic studies are treated in LBP-79-26, 10 NRC 453 (1979) and ALAB-644, 13 NRC 903 (1981). Similarly, management's involvement in the seismic redesign of the Diablo Canyon facility following the discovery of the Hosgri fault is dealt with in ALAB-763, 19 NRC \_\_\_\_ (March 20, 1984) (slip opinion at 87-89).



For the foregoing reasons, the joint intervenors' motions to reopen the record, with one reservation,<sup>25</sup> are denied.

It is so ORDERED.

FOR THE APPEAL BOARD

  
C. Jean Shoemaker  
Secretary to the  
Appeal Board

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<sup>25</sup> See note 21, supra.

## Diablo Plant Problems Hidden, Official Says

By ROBERT A. ROSENBLATT, Times Staff Writer

WASHINGTON—A quality-control inspector at the Diablo Canyon nuclear power plant has resigned in protest over working conditions, charging that Pacific Gas & Electric Co. covered up serious design problems and ignored his complaints of harassment by construction workers, it was learned Thursday.

"My personal safety has been compromised," the inspector, Timothy J. O'Neill, said in a letter of resignation to the Pullman Power Products Co., the piping contractor at the plant. He quit Tuesday, after a year on the job.

On July 10, workers doused him with a fire hose, and on Monday, "somebody in a crowd walking behind me and another inspector said, 'A .44 would take care of them,'" O'Neill said in a telephone interview from his home in Baywood Park, Calif., seven miles from the plant.

O'Neill plans to file an affidavit today with the Nuclear Regulatory Commission asking for an investigation.

"Licensing the plant in this atmosphere would reward management for inciting criminal harassment and for ordering a criminal cover-up," he said in the affidavit, which was read to The Times by O'Neill's lawyer, Thomas Devine.

The Nuclear Regulatory Commission previously had scheduled a meeting next Thursday to discuss Diablo Canyon. It was tentatively scheduled to vote at that meeting on giving the plant a license to operate at full power. PG&E, which owns the plant near

Please see **PROBLEMS**, Page 17

## PROBLEMS: Diablo Canyon Cover-Up Charged

Continued from Page 3

San Luis Obispo, currently has a low-power permit to generate electricity at up to 5% of capacity.

"There are very firm rules against harassment," PG&E spokesman Dick Davin said by telephone from San Francisco. "That is not to say it can't happen.

But we have taken steps to tell everyone we will not tolerate it, and people are subject to firing for engaging in it."

O'Neill said in his affidavit that the Diablo project uses poor welding procedures, with insufficient training for workers, and materials of dubious quality.

Many welded metal studs holding up pipe supports have an excessive carbon content and could become dangerously brittle, O'Neill said. The pipe supports, in turn, are crucial for the nuclear plant's safety, because they buttress the pipes carrying water to cool the reactor during an emergency, according to

O'Neill.

The former inspector said he complained that the steel often used in welding was of insufficient quality, only to have his concerns ignored.

"Everyone told me it was acceptable," he said during the telephone interview. "They force you to go out of the system by telling you everything is acceptable."

O'Neill said he had been criticized as a "nit-picker" for requiring quality standards on the work he inspected.

PG&E said its personnel had responded to O'Neill's complaints with careful inquiries but found his charges invalid.

"We have been bending over backwards for this guy," said PG&E spokesman Davin. "We have had meetings with him to be sure we understood his concerns. We investigated them, and we met with him to explain the results of the investigations. His concerns were not legitimate."

O'Neill said he has acted as a confidential informant for the Nuclear Regulatory Commission, providing information about welding and design problems at the plant.

O'Neill's attorney, Devine, said he will ask the Nuclear Regulatory Commission for an independent third-party investigation of his client's allegations that substandard materials and techniques are used at the plant.

EX-18-1

EXHIBIT O

PACIFIC GAS AND ELECTRIC COMPANY  
STATION CONSTRUCTION DEPARTMENT  
DIABLO CANYON PROJECT

Procedure MFI-2-7

Date June 5, 1984

MECHANICAL DEPARTMENT PROCEDURE

Rev. 16

TITLE: INSTRUCTIONS TO FIELD ENGINEERS AND INSPECTORS  
-HANGERS-

Page 1 of 4

APPROVED:

*DAY*

*ETWILL*  
FIELD STAFF ENGINEER

1.0 SCOPE

This instruction outlines the duties and responsibilities of Field Engineers and Inspectors in the Mechanical Pipe Hanger group.

2.0 RESPONSIBILITY

The Lead Mechanical Pipe Support Supervisor is responsible for implementing this instruction.

3.0 APPLICATION

This instruction applies to pipe hanger group activities related to installation and erection of pipe hangers under the jurisdiction of the Mechanical Group.

4.0 QUALIFICATIONS

Each Field Engineer and Inspector shall be fully qualified for his assigned duties by past work experience and on-site training. He shall be required to have a working knowledge of ASME Section I, III, IX, XI, ANSI B31.1 and B31.7, AWS Codes, AISC Specifications, State of California's Safety Orders, and specifications and drawings pertaining to his assigned work.

5.0 DUTIES

Field Engineers and Inspectors in the hanger group may be involved in on-site receiving, storage, handling, erection, fit-up, welding, bolting, cleaning, and initial support preinspection and in-process or final inspection. This may include any of the following.

- 5.1 Perform preinspection of pipe supports prior to release for installation.
- 5.2 Inspect the handling and placement of support structures.
- 5.3 Insure that plant equipment and structures are stored properly and protected at all times.

- 5.4 Insure that changes in support design are properly reviewed and documented.
- 5.5 Assist the contractor in arriving at a reasonable resolution with all problems associated with Company supplied design or materials.
- 5.6 Follow through on obtaining answers to contractor's questions or acting on his complaints.

#### 6.0 PREINSPECTION OF PIPE SUPPORTS

Pipe support detail drawings are issued to the hanger group for preliminary walkdown and review prior to being released for installation. These drawings are stamped, in red, "Issued For Pre-Inspection". The Pipe Support Field Engineer performs the following functions:

- 6.1 Preinspection and drawing clarification. This may include inspections of existing portions of supports, resolution of interferences and initiation of various forms required by other site procedures (i.e. Civil C-51, C-64 or C-73 forms). The Field Engineer verifies the ability of modifications required by design to fit the existing portions of installed supports and inspects for any other obvious work items or deficiencies.
- 6.2 The Field Engineer may request craft layout assistance from the mechanical contractor, Pullman Power Products. This may include drilling of exploratory holes for concrete anchor bolts to assure design constructability.
- 6.3 Preparation of pipe support fabrication requests as required.
- 6.4 Initiation of "Design Tolerance Clarification" forms as required (ref: PEI-12).
- 6.5 Redlining of the pipe support detail for clarification. All redlining will conform to tolerances approved by engineering for use by construction Field Engineers (i.e.: Pullman Power Products ESD-223). All redlining shall be ballooned, initialed and dated by the responsible pipe support Field Engineer.
- 6.6 Provide a list of work items required to complete the support.
- 6.7 Assemble the document package for release to the contractor. This package will include the redlined "Pre-Inspection Copy" of the support drawing.

Note: Pullman Power Products pipe support engineers may perform the preinspection functions outlined above at the request of PG and E.



TITLE:

INSTRUCTIONS TO FIELD ENGINEERS AND INSPECTORS  
-HANGERS-

Procedure MFI-2-7

Page 3 of 4

7.0 MATERIAL RECEIPT, HANDLING AND STORAGE

- 7.1 Materials received by PG and E shall be handled and stored in accordance with General Construction Q.A. Procedure GCP-11.1.
- 7.2 Materials received by contractors shall be handled and stored in accordance with their respective Quality Assurance manuals and approved procedures.

8.0 INSTALLATION

- 8.1 As items are moved from storage to the erection site, a random check may be made to assure only those items specified in approved drawings are used.
- 8.2 Pipe hanger installation shall conform to all applicable specifications and the contractor's quality requirements. Discrepancies shall be processed in accordance with applicable Pullman Power Products and PG and E Quality Control procedures.
- 8.3 Only those welding processes and procedures submitted by the contractor, and approved by PG and E, shall be used. Filler metal shall conform to the contractor's procedures and specifications.
- 8.4 The contractor's installations and records shall be monitored to insure that work quality and production rate are maintained. Inspectors may do random checks or establish hold points in the contractor's program. Hold points can be established by written notification to the contractor or by noting on the pipe support process sheet. The quantity of inspections shall be determined by the pipe support supervisor. Results of inspections shall be noted on the contractor's process sheet for the support.

9.0 DRAWING APPROVAL AND MODIFICATION

- 9.1 Class I Hangers are designed and approved by PG and E's Engineering Department.
  - 9.1.1 All changes made to PG and E pipe support drawings that are outside of ESD-223 tolerances shall be referred to the Pipe Support Design Tolerance (PSDTC) group or other approved method for resolution and documented per ESD-223, ESD-253 and MFI-2-17.

1  
-17

TITLE:

INSTRUCTIONS TO FIELD ENGINEERS AND INSPECTORS  
-HANGERS-

Procedure MFI-2-7

Page 4 of 4

9.1.2~ All changes to large bore pipe support drawings shall be shown on the as-built drawings. The as-builts drawings may be reviewed for compliance with Pullman Power Products ESD-223 by PG and E Field Engineering. Accepted as-built drawings are forwarded to PG and E's Engineering department through General Construction Drawing Control. Rejected as-builts are transmitted to the contractor for on Attachment #1 of MFI-2-7.

9.2 Non-Class I Hanger Design and Installation for PG and E code Class E piping:

9.2.1 Large Bore hangers are designed by Grinnell Company and PG and E. Small bore (non-Class I) hangers are designed by PG and E or field designed and installed by the contractor (Pullman Power Products).

10.0 REFERENCES

- 10.1 Specification 8711.
- 10.2 Contractor's Quality Assurance Manual.
- 10.3 PG and E Quality Assurance Manual.
- 10.4 ASME Section I, III, IX, and XI.
- 10.5 ANSI B31.1 and B31.7.
- 10.6 AWS D1.0-69.
- 10.7 AISC Manual of Steel Construction.
- 10.8 MFI-2-2, MFI-2-10.
- 10.9 COSHA
- 10.10 Pullman Power Products ESD-223.
- 10.11 Pullman Power Products ESD-253.
- 10.12 Project Engineering Instruction PEI-12.
- 10.13 Project Instruction PI-23 (IDI's).

MFI-2-7  
11-26-82  
ATTACHMENT #1

PACIFIC GAS AND ELECTRIC COMPANY  
STATION CONSTRUCTION DEPARTMENT  
DIABLO CANYON PROJECT

LARGE BORE AS-BUILT CHECKLIST

Support No. \_\_\_\_\_ Rev. \_\_\_\_\_ DCN \_\_\_\_\_ Unit \_\_\_\_\_

References: ESD-223 (Installation and Inspection of Pipe Supports)

THE ATTACHED DRAWING IS BEING REJECTED FOR THE FOLLOWING REASON(S):

- \_\_\_\_\_ 1. Lack of/or missing information.
- \_\_\_\_\_ 2. Material (type, size, etc.)
- \_\_\_\_\_ 3. Welds (type, size, etc.)
- \_\_\_\_\_ 4. Dimensions (gaps, etc.) Support Location to be shown from a known feature of the pipe.
- \_\_\_\_\_ 5. Anchor Bolts/Welded Studs (spacing, misalignment, edge distance, etc.)
- \_\_\_\_\_ 6. Comments (modifications, problems, etc.)

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

## Diablo inspector claims threats forced him out

By Carl Neiburger  
Staff Writer

An inspector at the Diablo Canyon nuclear power plant said today he was harassed into quitting on Tuesday after being threatened by workers, sprayed with a fire extinguisher and struck in the face by a rope.

Timothy J. O'Neill, 27, of Los Osos, made the charges in a petition filed with the Nuclear Regulatory Commission.

He said the campaign of intimidation came as he was being chewed out for raising safety issues by his superiors at Pullman Power Products, a major Diablo Canyon subcontractor, and officials of Pacific Gas and Electric Co., which owns the nuclear plant.

PG&E representative Richard P. Davin denied that O'Neill had been harassed or that officials had disparaged his concerns:

"We bent over backwards to try to understand what his concerns were," Davin said. "We investigated them. We met with him to go over what he found."

O'Neill, however, said that a PG&E quality control supervisor, rather than bending over backward to understand him, criticized him as inflexible and ordered him to follow procedures which, he said, violated regulations.

O'Neill said he went to work at the plant last summer to earn money to complete his engineering technology degree at Cal Poly, which he has attended since 1930.

"I had heard the stories," he said. "I had heard the place was screwed up. I didn't believe it. I wanted to check it out for myself."

He said he became a target for criticism by strictly enforcing codes and insisting on observing welding

procedures. He said he clashed with his foreman in May when he found a reinforcing bar had been severed during construction work.

O'Neill said he wanted to write up the problem but his supervisor ordered him to supervise welders instead and wait till he had time to report the severed rebar. O'Neill said he had too much work and wouldn't have time later.

Then, he said, the other incidents began:

- Two welders, who said they had been squirting hand-pumped water fire extinguishers at each other, squirted water over O'Neill and a work report he was writing.

- O'Neill said he and a fellow inspector overheard a welder behind them saying, "My .44 to the back will take care of both of them."

- On Tuesday, a worker threw a rope which struck O'Neill in the face. He said he suspects it wasn't accidental because, "Everybody was standing behind him (the worker), saying, 'Watch it, that's harassment.'"

O'Neill said that was when he decided to quit.

Davin denied that O'Neill was ever discouraged from writing reports but said he was told not to be out of his work area. O'Neill replied that he had to leave the area to copy documents needed to write the reports.

Davin said the water incident involved not a fire extinguisher but paper drinking cups and not more than a few ounces could have hit O'Neill.

As to the .44 threat, Davin said the worker hasn't been identified so there is no way of determining if it happened.



EXHIBIT 1

RESUME OF  
TIMOTHY J. O'NEILL  
JUNE 1983

PERMANENT ADDRESS:

3507 Winway  
San Mateo, CA 94403  
(415) 343-2270

PRESENT ADDRESS:

1355 12th Street  
Los Osos, CA 93402  
(805) 528-5529

CAREER OBJECTIVE

To secure a challenging position as a welding engineer in the construction industry; to obtain a professional engineer's license; and to establish my own consulting firm dealing with welder training, qualification testing, and procedure development for the construction industry.

EMPLOYMENT HISTORY

7/82 State of California, Department of Corrections  
to California Mens Colony  
9/82 P.O. Box A  
San Luis Obispo, CA 93409

Hired as Welding Instructor/Supervisor for Vocational Welding curriculum. Duties included classroom and lab instruction in preparation for all-position certification using SMAW and FCAW processes to AWS D1.1-83 and Los Angeles County code requirements. Other duties included inspection of bend test coupons, maintenance of certification records, and general process instruction using SMAW, GTAW, GMAW, FCAW, SAW, and OAC in a high-security prison environment.

6/81 Westinghouse Electric Corporation, Marine Division  
to Hendy Avenue  
9/81 Sunnyvale, CA 94088

Hired as Junior Welding Engineer. Primary responsibilities involved welding procedure development for various alloys and processes. Completed procedure development for vertical and overhead welding of HY-100 material using pulsed-spray GMAW process to Navy (NAVSHIPS 9010) submarine hull specifications. Also worked on developing hand-held SAW procedure for copper-nickel alloy, and square-wave AC SAW procedure for narrow-groove welding of HY-80.

5/80 Hired as Welding Technician for technical support of submarine  
to missile launch tube construction. Duties included training and  
9/80 certification of welders to military specifications, maintenance of qualification records and traceability, testing of incoming materials and filler alloys, welding of procedure qualification test plates, evaluation of performance and procedure qualification test specimens, and technical assistance for automatic and semi-automatic GMAW, GTAW, FCAW, SAW, and SMAW of HY-80 and Monel alloys.

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EXHIBIT 2

1355 12th Street  
Los Osos, CA 93402  
July 24, 1984

Mr. Harold W. Karner, QA/QC Manager  
Pullman Power Products Corporation  
P. O. Box 367  
Avila Beach, CA 93424

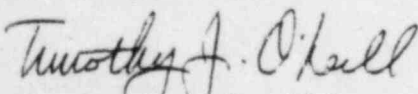
Dear Mr. Karner:

It is with sincere regret that I am forced to submit this letter of resignation, in protest of working conditions that do not provide the required freedom from harassment for me to perform my duties in accordance with Federal law. Recent events have indicated that my personal safety has been compromised, and I can no longer work in an atmosphere of harassment and intimidation.

Over the past year, I have seen quality problems at Diablo Canyon, and I have tried to work within the system as much as possible to resolve these problems. When it is obvious that the system is not responding, I have a legal responsibility to go outside of the system. As an inspector, I endeavored to work to the letter of our approved procedures, and if these seemed unworkable, I took steps to offer what I felt to be viable solutions. For these actions I have been physically harassed, verbally intimidated, and threatened with disciplinary action. The organizations participating in any or all of the above illegal activities include Pullman craft, craft management, engineering, quality assurance, quality control, PG&E quality control management via the Quality Hotline, and PG&E project engineering. These acts do not provide the organizational freedom mandated by 10CFR50, Appendix B, Criteria 1.

This action is taken neither lightly nor voluntarily. I would like to continue my employment at Diablo Canyon, as I feel I can make a quality difference; however under the present conditions this is not possible. Management must assume its legal responsibilities and provide sufficient organizational freedom for QC inspectors to perform their legally mandated duties without fear of harassment or reprisal.

Very truly yours,

  
Timothy J. O'Neill

P.S. Within 48 hours, I expect to receive by return mail the promised report on the distribution of my July 14, 1984 letter among the craft which it concerned (enclosed).



TO: S. EUGLER, GA/QC MGR.  
S. EUGLER, ASST. GA/QC MGR.  
J. WATSON, SUPERVISOR  
K. FOELKER, LEAD

FROM: T. O'NEILL, QC INSPECTOR

SUBJECT: UNAUTHORIZED USE OF FIRE EXTINGUISHER

THIS LETTER IS TO DOCUMENT, PER INSTRUCTIONS OF SUPERVISOR J. WATSON, THE INCIDENT DISCUSSED WITH LEAD K. FOELKER AND SUPERVISOR WATSON THE MORNING OF JULY 13, 1984.

ON TUESDAY, JULY 10, WHILE PERFORMING A QC WORKMANSHIP INSPECTION ON SUPPORT 4H-228R, I WAS SQUIRTED WITH A HAND-PUMP FIRE EXTINGUISHER BELIEVED TO BE PG+E # 107. THIS RESULTED IN MYSELF AND CONSTRUCTION DRAWING FOR SUPPORT 4H-228R BECOMING WET. REDUNED INFORMATION ON THE DRAWING WAS ALSO SMEARED, AS THE INK IS WATER-SOLUBLE. ON JULY 13, FIRE EXTINGUISHER WAS LOCATED ON ELEV. 55' AUX. II, IN THE STAIRWELL.

WHEN THIS INCIDENT OCCURED, I WAS LOCATED ON LINE 19<sup>B</sup>, APPROXIMATELY 8' EAST OF K LINE, IN THE "DUCK POND" ON ELEV. 64', UNIT II AUXILIARY BUILDING. THE WATER STREAM FROM PUMP FIRE EXTINGUISHER WAS DIRECTED AT ME FROM ELEV. 55' PIPE TUNNEL, THROUGH THE WALL PENETRATION WHERE SUPPORT 4H-228R IS LOCATED.

CIRCUMSTANCES AND PERSONNEL IN THE AREA OF THE PIPE TUNNEL INDICATE THIS COULD BE A FORM OF RETALIATION FOR A HARASSMENT INCIDENT DOCUMENTED ON JUNE 6, 1984. ALTHOUGH INCIDENTS OF THIS TYPE MAY APPEAR TO BE MINOR HORSEPLAY, THEY BECOME SERIOUS WHEN THEY IMPEDE AN INSPECTOR IN THE PERFORMANCE OF INSPECTIONS, OR IF DONE IN RETALIATION. THIS LETTER SERVES NOTICE THAT I WILL NOT TOLERATE SUCH ACTS, AND THAT I EXPECT MANAGEMENT TO TAKE ANY STEPS DEEMED NECESSARY TO PREVENT RECURRENCE.

SHOULD FURTHER DISCUSSION OF THIS MATTER BE NECESSARY, I WILL BE AVAILABLE AT YOUR EARLIEST CONVENIENCE

TJO  
7/24/84

Timothy J. O'Neill  
7-12

RECEIVED 7/24/84  
TJO

EXHIBIT 3

AFFIDAVIT

My name is Timothy J. O'Neill. I am giving this sworn statement freely, and without any threat or inducement, to John Clewett, who has identified himself to me as an attorney working with the Government Accountability Project of the Institute for Policy Studies, in Washington, D.C.. I have decided to speak openly and confidentially to those persons responsible for the regulatory agencies that govern construction and operation of Diablo Canyon Nuclear Power Plant (DCPP), which is owned and operated by Pacific Gas and Electric Company, (PG&E).

I am concerned over the quality of safety-related items I have seen installed at DCPP, and I do not feel the current level of quality is adequate to allow start-up and power operation of the plant. Additionally, I am concerned that the Nuclear Regulatory Commission (NRC) and PG&E are not sufficiently addressing quality problems presented to them by concerned workers at the plant. It is my opinion that a thorough investigation of quality control/quality assurance systems in operation for PG&E and subcontractors on site be conducted to determine the extent of quality control and design breakdowns at DCPP, specifically on piping and pipe supports. I also feel the cost of DCPP should be carefully evaluated to determine the extent of PG&E's and their subcontractor's incompetence in design and construction, as I do not feel this cost should be borne by the rate payers of PG&E.

I am currently employed as a Level II visual, dimensional, and welding inspector for Pullman Power Products, a major subcontractor at DCPP responsible for the installation of piping and pipe supports. My responsibilities include in-process inspection of pipe supports and piping, final inspection of the completed pipe support to verify conformance to design drawings,

and recently, auditing of completed pipe supports for problems discovered during the quality assurance phase of construction. My qualifications include nine years of employment in the welding industry, and a considerable amount of education pertaining to the technical and engineering aspects of welding. I have received an Associate of Science degree in Welding Technology from the College of San Mateo, in San Mateo, California. This is a nationally-acclaimed program in welding technology, and persons have been hired directly out of this two-year program as welding engineers. I have also completed engineering requirements for a Bachelor of Science degree in Engineering Technology--Welding Engineering, at California Polytechnic State University, San Luis Obispo, California. I am currently twelve general-education units short of fulfilling all graduation requirements, and expect to complete these by June, 1984. Over the last nine years I have worked as a welder, welding technician, welding engineer, and welding instructor. I hold a valid community college level teaching credential in the state of California as a welding instructor.

My major concerns over the construction quality of safety-related items at DCPD are the following:

1. Use of unqualified procedures and materials for welded applications, and in some cases, no written procedures for the items involved. Conformance to referenced codes and standards is not adequate, and in other cases, selection of weldable materials is poor, indicating lack of research of the material prior to welding.
2. Document control and review is less than adequate, and in some cases, designs are completely re-designed during construction and as-built (design analysis performed on the completed structure after construction). This leads to rejection and rework due to exceeding allowable stresses, and in some cases the item is completely redone.



- The overall level of training for craft, engineering and quality control personnel at Pullman is very low. Craft workers are not trained as to the specification requirements, which leads to QC rejection and rework. Engineers are not trained in aspects of welding such as good joint design and process selection, which also results in rework and rejection. Finally, QC inspectors are not trained according to the referenced codes and standards, and those that are aware of code requirements are intimidated by lead persons into accepting workmanship that is nonconforming to referenced codes.
4. Intimidation of inspectors by craft supervision and QC leadmen/supervisors. QC management uses craft supervisors to judge inspectors performance. Inspectors who don't "work with the craft" are reassigned to areas where less craft interaction occurs, or are terminated for reasons such as being late too many times, absences excessive, etc. Company policy in these cases is selectively applied.
  5. NRC investigations are superficial and directed only at specifics, rather than an overall problem. It seems the NRC is looking for ways to accept nonconformances, rather than ordering subcontractors and the client, PG&E, to do the job right. It appears that the NRC allows nonconformances to referenced welding codes and specifications. Investigators are in cases, misled by the client.

The remainder of this affidavit will detail specific examples to support the preceeding concerns. The documentation herein is presented to the examining parties with the understanding that its content will be held in strict confidence. As an employee of Pullman Power Products, I was required to sign a statement that I would not divulge Company information. The documents presented herein are for information only, and as such are not controlled items according to Pullman's specifications, however I



believe that I would be fired if Pullman was aware of who supplied these documents.

I. USE OF UNQUALIFIED MATERIALS AND PROCEDURES FOR WELDING,  
LACK OF WRITTEN PROCEDURES FOR BOLTING INSTALLATIONS

The way to build a nuclear power plant, as mandated by the 10CFR50 requirements, is to first design the plant, specify all procedures to be used in writing, and then proceed with construction. A further requirement is a quality control/quality assurance program to assure the designed level of quality is present. In this manner, the end result is a product that conforms to the intended design requirements. Two of the most crucial aspects of the design are that the materials selected for construction will have been shown adequate for their selected task, and that procedures used with these materials are shown to be able to produce the required end result. Only then is the plant built, using specified materials and procedures. In the case of welding, standard codes are used to specify the way welding is to be done. These are the codes of the American Welding Society and the American Society of Mechanical Engineers (AWS and ASME, respectively). The codes referenced for use at DCPD are ASME Section IX--Welding Procedure and Performance Qualifications, and AWS D1.1--Structural Welding Code for Steel. These codes are industry standards for critical welding requirements.

To fabricate items to a code, you must adhere to all aspects of the referenced code. The code will specify acceptable materials for use, and means to qualify materials intended for use that are not referenced in the code. These requirements differ between AWS and ASME codes due to their intents. ASME IX is primarily oriented toward pressure vessel fabrication, while AWS is geared toward structural steel erection. Piping and pipe supports encompass both areas, and the existing procedures at DCPD

are to use those areas of each code that apply to the item in question, and ignore other items in the referenced code. This is a nonconformance to the code requirements, and it appears that the NRC allows such nonconformances. These are in the area of using joint designs and materials specified and qualified for ASME welding, and transferring these unilaterally to welding performed under AWS code requirements, in violation of AWS prescribed welded joint design details. In other cases, materials are used that are unqualified to either of the referenced codes. These codes do not say you cannot use these materials, only that you must qualify the welding procedure that you intend to use. This welding procedure shall be qualified prior to use, to prevent costly rework that must eventually come from PG&E ratepayers and shareholders.

A good example of the use of unqualified procedures and materials concerns welded studs used throughout the plant on safety-related systems, primarily the containment spray system in both Unit One and Unit Two. PG&E approved specifications call for the use of ASTM A-307 or A-108 as materials for welded studs, to be welded in accordance with AWS D1.1--1982 Edition, Section 7. Several nonconformances exist here. Section 7 applies to automatic stud welding, which requires a procedure qualification that Pullman has not performed. Pullman uses welding procedures qualified to ASME IX for manually welding these studs, to a joint design specification that is nonconforming to the ASME welding procedure specification, and the AWS code requirements. Additionally, A-108 and A-307 are not referenced in either code as a recommended material for welding. Attachment 1 is a typical specification for use of these welded studs. The above-referenced nonconformances represent a serious breakdown of quality assurance, as these installations are indeterminate as to weld quality. The whole purpose of using a code is defeated by this process. Furthermore, A-307 is a fastener specification, as will be described subsequently, and it is not intended to be welded.

In welded applications, the governing factor in material selection is carbon content. The higher the carbon in the material, the more carefully it has to be welded. All materials listed in referenced welding codes have carbon limitations in their ASTM specifications to ensure weldability. A-307 is a material intended for bolts, and by specification, there is no limit on the amount of carbon allowed in the material. This makes weldability indeterminate without certified chemistry data from the manufacturer, which is not required according to the ASTM A-307 specification, which is included as Attachment 2.

The reason why carbon is unspecified in A-307 material is because the material is intended to be used as a mechanical fastener, i.e., a bolt, and is not intended to be used for welded applications. If excessive carbon were in a material, the welded joints would be weak and brittle without the use of special welding procedures, i.e., preheating the material prior to welding.

The generic problem with Pullman's PG&E approved program of welding studs is that in many cases, the components are purchased as bolts and the heads cut off to make a stud. This is evident from Attachment 3, which are several Pullman field warehouse requisitions (FWR) for studs. Attachment 5 is a purchase order showing that the purchased material conforms to the requirements for A-307 bolts. The A-307 specification requires A-36 material for "non-headed structural anchors", however it is my contention that this must be specified on the purchase order if this is desired. This would be the material of choice for welded applications. Attachment 6 shows the use of A-325 high strength bolts for welded applications as well. This is again, a completely unqualified and unsound material to be welding. These conditions were discovered while searching warehouse copies of FWR's for the QA department, in cases where material traceability was lost. QA is required to include the original FWR in the system package, and many times this is lost due to poor document control.



As a result of discovering the use of the referenced non-conforming materials, I wrote a discrepancy report to PG&E identifying the problem. My DR was re-written to exclude all reference to A-307 and A-108, although the Pullman QA/QC Manager Harold Karner did consider the use of A-325 serious. Attachment 7 shows a memo generated after my DR was submitted. Karner said there was no problem with A-307, as it was essentially A-36 material. His reference was the paragraph in the A-307 specification saying nonheaded structural anchors were to be of A-36 material. I pointed out we were not purchasing nonheaded anchors, and Karner informed me that Pullman's corporate welding engineer had evaluated A-307 and found it to be acceptable, although he could not provide documentation to that effect. It is my contention, and that of metallurgists consulted, that A-307 is not a weldable material due to its indeterminate carbon content, and the lack of a heat or chemistry traceability requirement by specification. I have not yet seen the re-written DR, although I have requested to on two occasions. I have also forwarded a copy of my original DR to the Region V office of the NRC for their evaluation of the content of the DR, and the method by which this report is handled by Pullman and PG&E.

The indeterminate quality resulting from the unqualified use of A-325, A-307, and A-108 materials extends throughout many safety-related systems at Diablo Canyon. In order to be reasonably assured that the safety-related functions of these supports is not impaired, a thorough reevaluation of all installations of this type is recommended, if not replacement of the studs in question.

In another classic example of poor material selection from a welding standpoint, PG&E specifies that all stainless steel materials for use at DCPD have a minimum carbon content of .04. This is shown on Attachment 8. This specification should read a maximum carbon content of .04, as this will reduce the like-



likelihood of carbide precipitation resulting in loss of corrosion resistance in welded joints. As installed, the materials are not likely going to last as long as requirements referenced in the Final Safety Analysis Report. The higher-carbon stainless steel is cheaper to purchase, however it could be inadequate for performing according to the design of the plant for the design life of the plant. I have addressed a memo to Pullman management on this subject, and to date received no reply.

## II. INADEQUATE DOCUMENT CONTROL

Another major generic defect in the quality control system at DCPD is that there is inadequate control of the documentation to which the plant is supposed to be built. When a work package arrives in the field, it often has not been adequately reviewed to ensure that the work can be done as the design drawings specify. When, as is often the case, the work cannot be done per design, field engineers are authorized to write "quick fixes", which are now referred to with the more euphemistic term "Pipe Support Design Tolerance Clarification". These are PG&E approved deviations from Pullman ESD 223 (Pipe Support Fabrication and Erection Specification referenced to Procurement Document 8711). Attachment 9 illustrate some of the poorer examples of quick fixes. These are still called "quick fixes" in Unit Two, and assigned a QF number for reference.

These documents make it very difficult for the field inspectors to do their work, as it is often necessary to trace through a large number of voided and superseded quick fixes to determine what the actual design requirements are. PG&E has a planned rejection rate of 40% for supports failing design requirements as a result of these changes to design. Pullman specifications also state a quick fix cannot be partially voided or superseded, however many times QC comments or acceptance on a voided quick fix is left intact in violation of specifications.

### III. INADEQUATE TRAINING OF CRAFT, ENGINEERING, AND QC

To compound the problems caused by inadequate procedures, materials, and document control, quality control personnel are handicapped by inadequate training to achieve an effective QC function. Training is sporadic and unprofessional, and usually right before an upcoming event, such as the ASME audit in August, 1983. They are not focused on learning, they are generally focused on intimidating personnel into changing embarrassing problems for management by threatening implicitly that "the next time this happens, it will be your job". Supervisors stand up in front of training sessions and tell you to take as much time as you need to make an inspection, and then tell you you're too slow and you have to make more inspections than you're doing as you're holding up production.

Other methods of training include handing the inspector a package of reading materials and a sheet to sign saying that he or she has read them. No effort is made to test whether the inspector understands what he supposedly read, except in the training program held prior to certification as an inspector. In some cases, the answers to these tests were lying right on the table during a closed-book exam. There is no incentive to display any initiative nor is anyone encouraged to search out the relevant codes and specifications, as management is afraid someone will "read into" a specification something that may embarrass the management.

Craft workers are not trained by their supervision as to the procedures or specifications they are required to adhere to in construction. Welders are only required to pass a welding test, there is no additional training here and this is a rarity on nuclear construction projects according to my research. Most welders get anywhere from four to twelve working days of training prior to certification at nuclear projects under construction.

#### IV. INTIMIDATION OF QUALITY CONTROL PERSONNEL BY CONSTRUCTION SUPERVISION AND QC MANAGEMENT/SUPERVISION

Consistent with the reluctance to properly train inspectors to do a good job and know the specifications they are required to inspect to, there is a serious problem of intimidation of QC inspectors who do not "work with the craft". As our own supervision in most cases is more concerned with production pressures than quality, inspectors who don't adhere to the program are subjected to intimidation by QC leadmen and supervisors. QC leadmen are also very unknowlegable when posed with everyday questions pertaining to acceptance standards of items not addressed in the specifications, and their response in some cases is that if it is not referenced in the specification as being rejectable, you must accept it. QC supervisors, when placed in situations where a field inspector will not accept items that are rejectable, will often accept the item so production can continue, instead of forcing the craft to do it right. The QA/QC Manager Harold Karner has a history of listening to production before his own field personnel. There was an incident where an inspector wrote up a report on a Superintendent for harassment and intimidation, with threats to go to the NRC. Karner tore up the report, exonerated Rich Babineau the Superintendent, and the inspector was fired for excessive absenteeism. Although he was excessively absent, stated policy was not followed and he was terminated, I feel, for alleging that the incident would be reported to the NRC.

If QC inspectors insist upon enforcing the codes and standards to which the plant is supposed to be built, they will be fired. This recently happened to Steve Lockert, a fellow Cal Poly Welding Engineering graduate. Steve was finding many items embarrassing to QC management, and he was fired for being out of his work area on a "wild goose chase" as stated in his termination notice. There are no wild geese at Diablo Canyon, and Steve has rightly appealed his firing to the Dept. of Labor.



V. INEFFECTIVE NRC OVERSIGHT

815 Morro Bay Blvd.  
Morro Bay, CA 93442

These problems would be less crucial if the NRC were likely to notice and resolve problems. In fact, it appears that the NRC is little more than a branch of PG&E. For example, in the wake of Steve Lockert's firing, the NRC audited my records and Steve's for the purpose of supporting allegations made by Steve. I was questioned in the presence of the QC manager Frany Lyautey by NRC investigator Dennis Kirsch. When Kirsch asked Lyautey about the whereabouts of Lockert's records, Lyautey replied, "When the man quit, I took possession of his records and initialed them all". When later asked about Lyautey's comment that Lockert quit, Kirsch replied that he didn't care what Frank Lyautey told him. It seems to me that the NRC should be concerned when a deliberate attempt is made to mislead its investigators. In another incident, myself and a fellow inspector, Craig Meagher, were told by a Bechtel production superintendent that a purge of equipment from Unit One prior to an NRC walkdown in October was, "To create the impression for the NRC that a very small workforce was operating in Unit One." This also seems to be a deliberate attempt to mislead the NRC.

VI. CONCLUSION

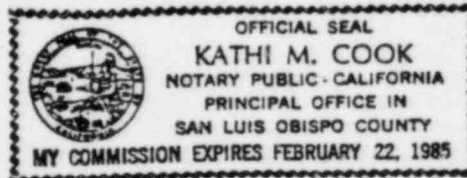
Each of the points touched on above will be expanded a great deal in forthcoming statements, with supporting documentation. The result of these problems is that the quality of many items at DCPD is indeterminate, and therefore there is a significant breakdown of the quality assurance program in effect. In order to allay public fears and concerns, I believe the circumstances warrant a thorough investigation by the appropriate authorities, including the NRC Office of Investigations and the United States Department of Justice.

Subscribed and sworn to before  
me this 23rd day of January, 1984

Kathi M. Cook  
Notary Public: My commission expires 2-22-85

Timothy J. O'Neill  
Timothy J. O'Neill





V. INEFFECTIVE NRC OVERSIGHT

815 Morro Bay Blvd.  
Morro Bay, CA 93442

These problems would be less crucial if the NRC were likely to notice and resolve problems. In fact, it appears that the NRC is little more than a branch of PG&E. For example, in the wake of Steve Lockert's firing, the NRC audited my records and Steve's for the purpose of supporting allegations made by Steve. I was questioned in the presence of the QC manager Frany Lyautey by NRC investigator Dennis Kirsch. When Kirsch asked Lyautey about the whereabouts of Lockert's records, Lyautey replied, "When the man quit, I took possession of his records and initialed them all". When later asked about Lyautey's comment that Lockert quit, Kirsch replied that he didn't care what Frank Lyautey told him. It seems to me that the NRC should be concerned when a deliberate attempt is made to mislead its investigators. In another incident, myself and a fellow inspector, Craig Meagher, were told by a Bechtel production superintendent that a purge of equipment from Unit One prior to an NRC walkdown in October was, "To create the impression for the NRC that a very small workforce was operating in Unit One." This also seems to be a deliberate attempt to mislead the NRC.

VI. CONCLUSION



STATE OF CALIFORNIA

COUNTY OF San Luis Obispo SS.

On this the 23<sup>rd</sup> day of January, 1984, before me the undersigned, a

Notary Public in and for said County and State, personally appeared

Timothy J. O'Neill

\_\_\_\_\_ personally known  
to me or proved to me on the basis of satisfactory evidence to be the  
person \_\_\_\_\_ whose name is subscribed to the within instrument  
and acknowledged that he executed the same.

Kathi M. Cook  
Signature of Notary

FOR NOTARY SEAL OR STAMP



815 Morro Bay Blvd.  
Morro Bay, CA 93442

AREA

Z-G

LINE

2-S3-2372-G B

HANGER SYMBOL

DATA PT. 5545B

H.I. VERT. RESTR.

20

39R

T40.0

C.S. SYSTEM

LOC ON DWG 501520

SHEET 8 OF 15

# FOR INFORMATION ONLY

## 1. Epoxy grouting:

- Use Ceilcote - 658N high temperature epoxy grout.
- Apply per manufacturer's recommended installation instructions and in accordance with procedures approved by Project Engineering.

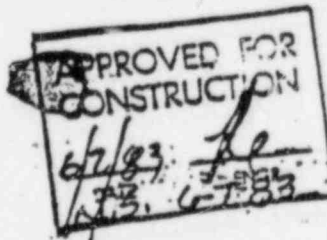
## 2. Studs and Nuts

- All studs shall be Nelson stud ASTM A 108 Grade 1010 - 1020 or ASTM A307 Grade B.
- All studs shall be installed in accordance with spec. 8831 and shall be welded per AWS D1.1 (1982) Sect. 7.
- All studs shall be torque-tested in accordance with AWS D1.1 1982 Sect. 7.
- The installation torque for all studs shall be one half of the test value as specified in (c) with a tolerance of + 10%.
- Washer shall be provided when the hole size is 1/8" larger than the bolt diameter.
- The studs shall have lock nuts. Where existing studs will be used and insufficient threads are available for use of lock nuts, spoiling of the threads is acceptable.

## 3. Installation tolerances shall be in accordance with DCM-M9 unless otherwise noted on hanger drawings.

## 4. Lugs:

- For location of shear lugs, see the base plate drawing.
- THE HEIGHT OF THE SHEAR LUG SHALL BE CHOSEN, SUCH THAT THE TOP OF THE SHEAR LUG SHALL BE FLUSH OR BEYOND THE FACE OF THE BASE PLATE



CONTROLLED COPY

DC-2-E-P-6948 REV. 2.

SK. 20/39R REV. 2

ATTACHMENT 1 80

DSGN LK

DWN GDL

CHKD LK 1-20-83

DRAWING NO

051372

OBJECT: DIABLO CANYON

UNIT: 2

SHT 234 OF

SHTS

P G &amp; E CO

ISSUE REV

# SPECIFICATION FOR LOW-CARBON STEEL EXTERNALLY AND INTERNALLY THREADED STANDARD FASTENERS



SA-307

(Identical with ASTM Specification A 307-68 except that Grade A Bolts and Nuts have been deleted)

## Chemical Requirements

3. (a) Steel for bolts and nuts shall conform to the following chemical requirements:

	Grade B	
	Bolts	Nuts
Phosphorus, max. per cent. ....	0.04	0.12
Sulfur, max. per cent. ....	0.05	0.16

(b) Resulfurized material is not subject to rejection based on check analysis for sulfur.

(c) Bolts and nuts are customarily furnished from stock, in which case individual heats of steel cannot be identified.

## Mechanical Requirements

4. (a) Bolts shall meet the hardness requirements specified in Table I. This shall be the only requirement for bolts which are too short or which have insufficient threads for tension testing or which have drilled or undersize heads that are

TABLE I.—HARDNESS REQUIREMENTS FOR BOLTS

Bolt Size, in.	Grade	Hardness			
		Brinell		Rockwell B	
		Min	Max	Min	Max
All.....	B.....	121	207	69	95

weaker than the threaded section of the bolt.

(b) Bolts, other than those excepted in Paragraph (a), shall be subject to a tension test as specified in Section 6. Where both hardness and tension tests are performed, acceptance on the basis of the tensile requirements shall take precedence where the minimum requirements are the subject of controversy.

(c) Bolts 1½ in. and under in diameter when tested in full size shall meet the requirements for tensile strength specified in Table II.

(d) Bolts 1½ to 3 in. in diameter, inclusive, shall be tested preferably in full size and shall meet the requirements for tensile strength specified in Table II. But when equipment of sufficient capacity for such tests is not available, they shall meet the following requirements on machined specimen tension tests:

Tensile Strength, psi      Elongation in 2 in., per cent

Grade B bolts ..... 90 000 min      18 min  
100 000 max      ...

(e) Nuts shall meet the hardness requirement specified in Table III. Hardness shall be the only requirement for jam, slotted and castle nuts and for nuts larger than 1½ in. in size.

(f) Nuts 1½ in. and under in size shall meet the proof loads specified in Table III.

(g) Nuts 1½ to 1½ in., inclusive, in size shall preferably meet the requirements

(a) This specification covers the chemical and mechanical requirements of low-carbon steel externally and internally threaded standard fasteners, 4 in. and under in diameter, frequently used for the following applications:

(b) Bolts, for flanged joints in systems where one or both flanges are of cast iron.

(c) Nonheaded anchor bolts, either straight or bent, to be used for structural purposes, shall conform to the requirements of the Specification for Low-Carbon Steel (ASTM Designation: A 36) with tension tests to be made on the body or on the bar stock used in making the anchor bolts.

## Material and Manufacture

Steel for bolts shall be made by the open-hearth, basic-oxygen, or electric process.

Steel for nuts shall be made by the open-hearth, basic-oxygen, electric-furnace, or vacuum process.

Bolts may be produced by hot or cold rolling of the heads or machining from bar stock.

Threads may be rolled or cut. Nuts may be produced by hot rolling, cold punching, cold forging, or machining from bar stock.

of ASTM Standards, Part 4.



TABLE II.—TENSILE REQUIREMENTS FOR FULL SIZE BOLTS.

Bolt Size, in.	Threads per inch	Stress Area, sq. in. <sup>a</sup>	Tensile Strength, lb	
			Grade A min. <sup>b</sup>	Grade B min. <sup>c</sup>
1/2	20	0.0318	1 900	3 190
3/8	18	0.0524	3 100	5 240
1/2	16	0.0778	4 050	7 750
3/4	14	0.1063	5 350	10 620
1	13	0.1419	8 500	14 190
1 1/4	12	0.182	11 000	18 200
1 1/2	11	0.226	13 500	22 600
2	10	0.334	20 050	33 400
2 1/2	9	0.463	27 700	46 200
3	8	0.606	36 350	60 600
3 1/2	7	0.763	45 800	76 300
4	7	0.909	58 150	90 900
4 1/2	6	1.146	69 300	114 500
5	6	1.406	84 300	140 500
5 1/2	5	1.66	114 000	190 000
6	4 1/2	2.50	150 000	250 000
6 1/2	4 1/2	3.26	196 000	325 000
7	4	4.00	240 000	400 000
7 1/2	4	4.92	295 800	492 000
8	4	5.97	358 200	597 000
8 1/2	4	7.10	426 000	710 000
9	4	8.33	499 800	833 000
9 1/2	4	9.66	579 000	966 000
10	4	11.08	664 800	1 108 000

<sup>a</sup> Area calculated from the formula:

$$A_s = 0.7854 \left( D - \frac{0.9743}{n} \right)^2$$

where:

 $A_s$  = stress area, $D$  = nominal diameter of bolt, and $n$  = threads per inch.<sup>b</sup> Based on 90 000 psi.<sup>c</sup> Based on 100 000 psi.

for proof load specified in Table III, but when equipment of sufficient capacity for such tests is not available they shall meet the hardness requirements specified in Table III.

**Dimensions**

5. (a) Unless otherwise specified, threads shall be the Coarse Thread Series as specified in the latest issue of the USA Standard for Unified Screw Threads (USAS B1.1), having a class 2A tolerance for bolts and class 2B tolerance for nuts.

(b) Unless otherwise specified, Grade B bolts shall be Heavy Hex Bolts with dimensions as given in the latest issue of USA Standard B18.2.1.

TABLE III.—HARDNESS AND PROOF LOAD REQUIREMENTS FOR NUTS.

Nut Size, in.	Threads per inch	Proof Load, lb <sup>a</sup>	Brinell Hardness, min.
1/2	20	3 850	...
3/8	18	4 700	...
1/2	16	7 000	...
3/4	14	9 550	...
1	13	12 750	...
1 1/4	12	16 400	...
1 1/2	11	20 350	...
2	10	30 060	...
2 1/2	9	41 900	...
3	8	54 550	...
3 1/2	7	68 550	...
4	7	87 200	104
4 1/2	6	103 950	104
5	6	126 450	104
5 1/2 to 4, incl.	...	...	104

<sup>a</sup> Based on 90,000 psi mandrel stress for nut sizes 1/2 to 2 1/2 in., inclusive; 77,000 psi for 3 in.; and 67,000 psi for 3 1/2 to 4 in., inclusive.

(c) Unless otherwise specified, nuts for Grade B bolts shall be Heavy Hex Nuts with dimensions as given in the latest issue of USA Standard for Square and Hex Nuts (USAS B18.2.2).

**Methods of Test**

6. (a) The material shall be tested in accordance with Supplement III of the Methods and Definitions for Mechanical Testing of Steel Products, (ASTM Designation: A 370).<sup>a</sup>

(b) Standard square and hexagon bolts only shall be tested by the wedge tension method. Fracture shall be in the body or threads of the bolt without any fracture at the junction of the head and body. Other headed bolts shall be tested by the axial tension method.

(c) Nuts shall be tested by the axial proof load method.

(d) Speed of testing as determined with a free running crosshead shall be a maximum of 1 in. per min for the tensile strength tests of bolts and the proof load determination on nuts.

**Number of Tests and Retests**

7. (a) The requirements of this specification shall be met in continuous mass production for stock, and the manufac-

turer shall make same ensure that the product specified requirements of individual shipments not ordinarily contemplated heats of steel are not finished product.

(b) When specified in manufacturer shall furnish certified to be the latest mechanical tests for each shipment.

(c) When additional tests on the purchase order poses of selecting test samples consist of all material offered for at one time that has the following characteristics:

(1) One type of item, that nuts,

(2) One nominal size, and

(3) One nominal length of bolt

(d) From each lot, the tests for each requirement shall be as follows:

Number of Pieces in Lot

800 and under

801 to 8 000

8 001 to 22 000

Over 22 000

(e) If any machined test shows defective machining it may be discarded and another specimen substituted.

(f) Should any sample fail to meet requirements of a specified test, the number of samples from the lot shall be tested, in which case the additional samples shall meet specification.

**Marking**

8. Bolt heads shall be marked, raised or depressed mark at the option of the manufacturer) to identify the manufacturer. The manufacturer may add additional marking for his own use.

**Inspection**

9. (a) If the inspection described in Paragraph (b) is required by the purchaser it shall be specified in the inquiry, order, or contract.

ATTACHMENT 2  
PAGE 2 OF 3



LOW-CARBON STEEL EXTERNALLY AND INTERNALLY THREADED  
STANDARD FASTENERS

SA-307

(b) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works that concern the manufacture of the material covered. The manufacturer shall afford the inspector all reasonable facilities,

without charge, to satisfy him that the material being furnished in accordance with these specifications. All tests (except check analysis) and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the

operation of the works.

Rejection

10. Unless otherwise specified, any rejection based on tests specified herein shall be reported to the manufacturer within thirty working days from the receipt of samples by the purchaser.

ATTACHMENT 2  
PAGE 3 OF 3  
TJO

8.2 (05-78)

Pullman Power Products

Priority 5/32R

FIELD WAREHOUSE REQUISITION

ITEM 9 LINE SPEC. 2-56-255-10 SPL A DATE 6-6-83  
 Q NO 5/32R DETAIL DWG. NO. 057349 DDR. NO. ACT. NO. 7177 PAGE NO. OF

QTY	QUANTITY DELIVERED	ITEM DESCRIPTION	P.O. NO.	ITEM NO.	HEAT NO.
6	6	7/8" X 0.3" Lg. Threaded welding stud with nuts Manuf. from A307 Gr. B Mat	9287	B	
		Class I Hanger			

DELIVER TO AREA ELMER FOREMAN J. L. Anderson Q. A. APPROVED Don Bice 6-6-83  
 DCD BY W. J. Swenson FILLED BY W. J. Swenson 6-6-83  
 JG APPROVAL

ATTACHMENT 2  
 JP

DUE TO TYPO ERROR  
THERE IS NO  
ATTACHMENT 4.

TA

**FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT**

JOB NO. <b>7177</b>		DATE <b>1-21-81</b>	SHEET NO. <b>1 of 2</b>	SHIPPING ADDRESS: <b>PULLMAN POWER PRODUCTS C/O Pacific Gas &amp; Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424</b>		REQ. - NO. F- <b>7177-9287</b>	
DISCOUNT TERMS		SHIPPING TERMS				JOB COST CODE: <b>122</b>	
VIA				VENDOR: <b>Cardinal Bolt 3873 W. Oquendo Las Vegas, Nevada 89118</b>		MAIL 4 COPIES OF INVOICES TO: <b>P.O. Box 367 Avila Beach, CA 93424</b>	
ITEM (LETTER)	QTY. REQ'D.	DESCRIPTION		UNIT PRICE	TOTAL	DATE REC'D.	QTY. REC'D.
A	100	7/8" x 2" Mach. Bolts A307-Gr.B		1 89	189 00		
B	100	7/8" x 3" Mach. Bolts A307-Gr.B		2 26	226 00		
C	300	1/2" x 1 1/4" Mach. Bolt A307-Gr.B		58	174 00		
D	300	1/2" x 1" Mach. Bolt A307-Gr.B		56	168 00		
E	1000	3/8" Heavy Hex Nuts A194-Gr.2H		22	220 00		
NOTE: SEE SPECIAL REQUIREMENTS ATTACHED							
<b>TOTAL PRICE</b>						<b>977 00</b>	

NEEDED FOR: <b>hanger Stock (Wally Franklin)</b>			<b>REIMBURSABLE</b>	<b>RECEIVING DEPARTMENT</b>	
DATE NEEDED:	DATE ORDERED: <b>2-5-81</b>	DATE PROMISED: <b>3-5 Days</b>		CARRIER:	
DWG(S) ATTACHED:				COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>	
PREPARED BY: <b>R. King</b>	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>		PREPAID: <b>\$</b> COLLECT: <b>\$</b>	
<b>IMPORTANT: THIS ORDER IS SUBJECT TO ALL THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.</b>  OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE. MARK ALL SHIPPING TAGS				RECEIVED BY:	
			<i>[Signature]</i>		



**FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT**

JOB NO. <b>7177</b>	DATE <b>1-21-81</b>	SHEET NO. <b>2 of 2</b>	SHIPPING ADDRESS: <b>PULLMAN POWER PRODUCTS c/o Pacific Gas &amp; Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424</b>	REQ.- P.O.- <b>NO. F- 7177-9287</b> R.R.-
DISCOUNT TERMS		SHIPPING TERMS		JOB COST CODE: <b>122</b>
VIA		VENDOR: <b>Cardinal Bolts 3873 W. Oquendo Las Vegas, Nevada 89118</b>		SUBCONTRACT NO.
				MAIL 4 COPIES OF INVOICES TO: <b>P. O. Box 367 Avila Beach, CA 93424</b>
SPECIAL REQUIREMENTS FOR STRUCTURAL BOLTS OR FASTENERS FOR HANGERS:				
HB1.	Supplier shall furnish three copies of a Manufacturer's Certificate of Compliance signed by manufacturer indicating that materials furnished are in compliance with this Purchase Order, with specifications, or as listed in suppliers or manufacturers catalog.			
HB2.	Certificate of Compliance shall be traceable to our Purchase Order and Item No.			
HB3.	All required documentation shall be sent the day of each shipment to PULLMAN POWER PRODUCTS, P.O. Box 367, Avila Beach, CA 93424 Attn: Q.A. Dept. In addition, a copy shall accompany each shipment.			
HB4.	Any nonconformance to the requirements of the Purchase Order will be considered just cause for return of materials without cost to buyer.			
HB5.	Materials shall be domestically manufactured.			
ATTACHMENT 5 PAGE 2 OF 32 <i>JP</i>				

NEEDED FOR:			<b>REMARKS</b> <u>SOURCE DOCUMENT REQUIREMENTS</u> Corp. Appr. Vendor; May Use Site Appr. Vendor (All) Hanger CLI, G, E, Sprinkler Spec M-10 8724 Cardox	<b>RECEIVING DEPARTMENT</b>	
DATE NEEDED:	DATE ORDERED:	DATE PROMISED:		CARRIER:	
DWG(S) ATTACHED:				COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> PREPAID: <b>5</b> COLLECT: <b>5</b>	
PREPARED BY:	APPROVED BY: <i>[Signature]</i>	PURCHASED BY:		RECEIVED BY:	
<b>IMPORTANT:</b> THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.  OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING,				<div style="font-size: 2em; font-weight: bold;">REIMBURSABLE</div>	

F 8.2 (05-78)

## Pullman Power Products

Division of Pullman Incorporated

### FIELD WAREHOUSE REQUISITION

ITEM 1-14 LINE SPEC. 1-K2-314-12 DATE 3-16-83  
 Q NO. N/A DETAIL DWG. NO. 049266 DDR. NO. N/A ACT. NO. 7177 PAGE NO.      OF     

[illegible]

DELIVER TO AREA John S. Williams FOREMEN  
 REC'D. BY John S. Williams  
 I.G. APPROVAL John S. Williams

Fred Bauer 3-17-83  
Q. A. APPROVED  
[Signature]  
FILLED BY

WHITE COPY — Q.A.

CANARY COPY - WAREHOUSE

PINK COPY — FIELD ENGINEERING

WT 2 Hold Alpha Ren Monitoring  
 LIVER TO AREA *Chen Yogan* FOREMEN  
 Q. A. APPROVED  
 BY *L. Lenoir*  
 APPROVAL  
 Filled Baker 3-29-83  
 Q. A. APPROVED  
 BY *M. Bann* 439.  
 FILLED BY



# FIELD WAREHOUSE REQUISITION

SYSTEM

LINE SPEC.

**UPDATE**

SỐ NƠI:

## DETAIL

**PWG-K10**

**FOR NO**

FACT NO.

PAGE NO. 10

2001

QUANTITY	QUANTITY DELIVERED	ITEM DESCRIPTION	LOT NO.	ITEM NO.	HEAT NO.
				B-	
		CLASS H JG S N-1 G			
		Fm 7A			

Peck's area 440 Pol. I did. NR. 1078

ELIVER TO AREA *[Signature]* FOREMEN *[Signature]* AND APPROVED *[Signature]*

EC'D BY [Signature] 0-87-10

NG APPROVAL *[Signature]* FILED BY *[Signature]*

PC-BANK COPY — WAREHOUSE — PC-BANK COPY — FIELD ENGINEERING

WHITE COPY - Q.A. CANARY COPY - WAREHOUSE

## Pullman Power Products

8.2 (05-78)

## FIELD WAREHOUSE REQUISITION

**STEM**

## CINE SPEC

DATE \_\_\_\_\_

2 NO.

## DETAIL

DWG. NO. 6

DDR. NO

ACT. NO.

PAGE NO.

2 OF

[illegible]

608-2700-140 ~~Red~~ Red 608-3783

WIVER TO AREA FOREMEN Q. A. APPROVED

FD-302 (Rev. 11-27-60)

3-APPROVAL \_\_\_\_\_



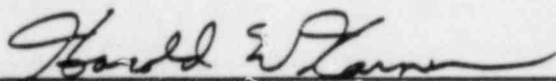
INTEROFFICE CORRESPONDENCE

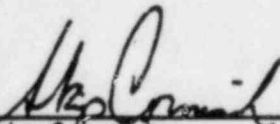
ATTACHMENT  
7 ~~85~~

DATE JANUARY 17, 1984  
TO ALL FIELD ENGINEERS/QC INSPECTORS  
FROM H.W. KARNER/SKIP CORNISH  
SUBJECT WELDED STUDS (A325)

There have been several cases identified where A325 bolts have had the heads removed and have been used as a welded stud in hanger applications. This material is not qualified for use in welded applications by our weld procedures. A DR has been submitted to PG&E concerning this matter.

Welded studs must be A36 or other P1 material. If there are any questions, contact your Supervisor.

  
\_\_\_\_\_  
Harold W. Karner  
QA/QC Manager

  
\_\_\_\_\_  
Skip Cornish  
Chief Field Engineer

HWK:SC:sam





**Pullman Power Products**  
Division of Pullman Incorporated

72-58-28 REV 5/15/79

**FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT**

JOB NO. <b>7177</b>		DATE <b>12-09-83</b>		SHEET NO. <b>1 of 3</b>		SHIPPING ADDRESS: <b>PULLMAN POWER PRODUCTS</b>				REQ. NO. F- <b>7177 -14386</b>			
DISCOUNT TERMS		SHIPPING TERMS		c/o Pacific Gas & Electric Co. Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424				JOB COST CODE: <b>122</b>		SUBCONTRACT NO.			
VIA				VENDOR: <b>Gulfalloy</b> P.O. Box 52518 Houston, Texas 77052				MAIL 4 COPIES OF INVOICES TO: <b>P.O. Box 367</b> <b>Avila Beach, CA 93424</b>					
1-713-672-7451 Alan													
ITEM (LETTER)	QTY. REQ'D.	DESCRIPTION						UNIT PRICE	TOTAL	DATE REC'D.	QTY. REC'D.		
A	100	1" - 3000# S/W Caps A105						4.42	442.00				
		Pls. Chemical and Physical analysis shall be in accordance with requirements of ASME SA105 1980											
		Plb. Special examinations and Test for Nuclear Piping shall comply with ASME Section III Class 2, 1980. W/Winter 82 Addenda											
		SEE SPECIAL REQUIREMENTS ATTACHED											
								<b>TOTAL PRICE</b>		442 00			

NEEDED FOR: <b>WHSE Stock</b>		
DATE NEEDED: <b>Part ASAP</b>	DATE ORDERED: <b>12-21-83</b>	DATE PROMISED: <b>Ship 7-10 Days</b>
DWG(S) ATTACHED:		
PREPARED BY: <i>YOM</i>	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>
<p><b>IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.</b></p> <p>OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING, EXPRESS RECEIPTS AND CORRESPONDENCE. MARK ALL SHIPPING TAGS AND PACKAGES WITH ABOVE ORDER NUMBER.</p>		

REMARKS <b>Code Class "B"</b> <b>P. Malloy</b>
<p><b>REIMBURSABLE</b></p> <p><b>ATTACHMENT 8</b></p> <p><b>PAGE 1 OF 34</b></p> <p><i>CAO</i></p>

RECEIVING DEPARTMENT	
CARRIER:	
COMPLETE <input type="checkbox"/>	PARTIAL <input type="checkbox"/>
PREPAID: \$	COLLECT: \$
RECEIVED BY:	

## FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

B NO. 177	DATE 12-09-83	SHEET NO. 2 OF 3	SHIPPING ADDRESS: PULLMAN POWER PRODUCTS C/O Pacific Gas & Electric Company Diablo Canyon Power Plant 7 Miles North of Avila Beach, CA 93424	REF. NO. F-7177-14386
SCOUT TERMS	SHIPPING TERMS			JOB COST CODE 122
VENDOR: Gulfalloy			MAIL 4 COPIES OF INVOICES TO: P.O. Box 367 Avila Beach, CA 93424	

SPECIAL REQUIREMENTS FOR CLASS I PIPE AND FITTINGS: (CONTINUED)			UNIT PRICE	TOTAL	DATE REC'D.	QTY REC.
2.	Supplier shall furnish three copies of Mill Test Reports.					
3.	Mill Test Reports shall be traceable to this Purchase Order and Item No. Test results shall be actual not typical.					
4.	Required documentation shall be sent on the day of shipment to PULLMAN POWER PRODUCTS, P.O. Box 367, Avila Beach, CA 93424, ATT: Q.A. DEPT. In addition, a copy shall accompany each shipment.					
5.	Any nonconformance to the requirements of Purchase Order will be considered just cause for return of material without cost to buyer.					
6.	Items set forth in the Purchase Order are for use in Nuclear Safety-Related components subject to reporting requirements pursuant to Section 206 of the Energy Reorganization Act of 1974, as implemented by 10 CFR21. Notice of any defects identified by Vendor pursuant to such law shall be immediately made to the Director of PULLMAN POWER PRODUCTS P.O. Box 3308 Williamsport, PA. 17701.					
7.	If stainless steel materials are to be supplied on the Purchase Order they shall have a minimum carbon content of .04.					
8.	Identification marking for fittings shall consist of the manufacturers					
TOTAL PRICE						

NEEDED FOR:			REMARKS: CORP. APPR. VENDOR		RECEIVING DEPARTMENT	
DATE NEEDED:	DATE ORDERED: 12-21-83	DATE PROMISED:	8711 Pipe Class A 8711 Pipe class B 8711 Pipe Class C		CARRIER:	
COPIES ATTACHED:					COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/>	
PREPARED BY: LPM	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>	ATTACHMENT 8 PAGE 2 OF 34		PREPAID: \$ COLLECT: \$	
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.					RECEIVED BY:	
YOUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING.						

## FIELD REQUISITION - PURCHASE ORDER - RECEIVING REPORT

JOB NO. 7177	DATE 12-9-83	SHEET NO. 3 OF 3	SHIPPING ADDRESS: PULLMAN POWER PRODUCTS C/O Pacific Gas & Electric Company Diablo Canyon Power Plant 7 miles North of Avila Beach, CA 93424	REQ. - P.O. - NO. F- 7177-14386 R.R. -
DISCOUNT TERMS		SHIPPING TERMS		JOB COST CODE: 122
VIA			VENDOR: Gulfalloy	SUBCONTRACT NO.
			MAIL 4 COPIES OF INVOICES TO P.O. Box 367 Avila Beach, CA 93424	

SPECIAL REQUIREMENTS FOR CLASS 1 PIPE AND FITTINGS: (CONTINUED)		UNIT PRICE	TOTAL	DATE REC'D.	QTY
	symbol or name, designation of service rating, applicable specification, grade, size and heat no.				
P8b.	For 3/4" and less, a code number traceable to a Mill Test Report shall be adequate marking.				
P9.	Identification marking for pipe shall be in accordance with ASTM specifications. In addition, the heat number and PULLMAN POWER PRODUCTS' Purchase order Number shall be on each length.				
P10.	Material shall be marked by any method that will not result in any harmful contamination or sharp discontinuities. Marking must be in accordance with requirements of USAS B31.7. If marking is steel by stamping, it shall be with round-nose or interrupted dot die stamping. In no case shall the wall or plate thickness be reduced below the minimum.				
P11.	Materials shall be domestically manufactured. Materials shall be free of oil and foreign matter. Pipe ends shall be capped.				
TOTAL PRICE					

NEEDED FOR:			REMARKS  ATTACHMENT 8 PAGE 3 OF 4 TJO	RECEIVING DEPARTMENT	
DATE NEEDED:	DATE ORDERED: 12-21-83	DATE PROMISED:		CARRIER:	
WG(S) ATTACHED:				COMPLETE <input type="checkbox"/> PARTIAL	
PREPARED BY: <i>LPM</i>	APPROVED BY: <i>[Signature]</i>	PURCHASED BY: <i>[Signature]</i>		PREPAID: \$	COLLECT: \$
IMPORTANT: THIS ORDER IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF.				RECEIVED BY:	
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, BILLS OF LADING,					





# Pullman Power Products

PRODUCT ENGINEERING DEPARTMENT

## QUALITY ASSURANCE AND DOCUMENTATION REQUIREMENTS

ATTACHMENT 8

PAGE 4 OF 4

*[Handwritten signature]*

	REQ'D	APPROVED BY CUSTOMER	VERIFIED BY P.P.P. Q.C.
1. Vendor Quality Assurance Program - ASME Section III	✓		
2. Certified Drawings for Approval			
3. Qualified Procedures for Approval			
a. Welding			
b. Weld Repairs			
c. Heat Treatment			
d. Ultrasonic			
e. Radiograph			
f. Magnetic Particle			
g. Liquid Penetrant			
h. Eddy Current			
4. Documentation	✓		
a. Mill Reports			
b. Impact Tests			
c. Ultrasonic			
d. Radiograph			
e. Magnetic Particle			
f. Liquid Penetrant			
g. Eddy Current Results			
h. Hydrostatic			
i. Partial Data Reports ASME Section			
j. NDT Personnel Qualifications			
k. Manufacturer's C of C			
5. Marking per P.P.P. Standard	✓		
<i>Helfalloy</i> P.O. # 7177-14386			

PREPARED BY

*R. C. King*

DATE OF ISSUE 12-21-83

APPROVED BY

*J. J. [Signature]* 12-21-83

PAGE      OF

PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SEQUENCE NUMBER QF-2-760

SUBJECT 2B-44R REV. 4

CLASS I

LOCATION IS UNIT-2

DESCRIPTION: REQUEST PERMISSION TO.

1. USE A194 NUTS AND WASHERS INSTED OF A325.

INTERPRETED  
"INSTEAD"  
P. Amin  
11-29-83

2. TORQUE TO  $\frac{1}{2}$  TURUN PAST NUT.

P. Amin / 11/29/83

INTERPRETED INTO  
ENGLISH AS,  
... TURN PAST NUT  
P. Amin  
11-29-83

3. VOID Q.F-2-759

SEE TC #2-5945  
FOR REFERENCE  
R/S 11-28-83

FOR INFO  
ONLY!

REFERENCE DRAWING 051373

ATTACHMENTS

YES

(NO)

PAGES (INC. THIS SHEET) 1

AREA ENGINEER:

CONSTRUCTION MAY PROCEED

P Amin

DATE 4-27-83

CONSTRUCTION D.P. REQ'D

CONTRACTOR RECEIPT

Peter Weiss

DATE 4-27-83

ATTACHMENT 9  
PAGE 1 OF 4

## PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SEQUENCE NUMBER QF-2-760  
SUBJECT 2B-44R REV. 4 CLASS I  
LOCATION IS UNIT-2

DESCRIPTION: REQUEST PERMISSION TO.

1. USE A194 NUTS AND WASHERS INSTEAD OF A325.

INTERPRETED  
"INSTEAD"

2. TORQUE TO  $\frac{1}{2}$  TURUN PAST NUT.

INTERPRETED INTO  
ENGLISH AS,  
... TURN PAST =

3. VOID Q.F.-2-759

SEE TC # 2-5945  
FOR REFERENCE  
R/S 11-28-83

FOR INFO -  
ONLY

REFERENCE DRAWING 051373

ATTACHMENTS

YES

(NO)

PAGES (INC. THIS SHEET) 1

AREA ENGINEER:

CONSTRUCTION MAY PROCEED

P Amin

DATE 4-27-83

CONSTRUCTION D.P. REQ'D

CONTRACTOR RECEIPT

Peter Weiss

DATE 4-27-83

ATTACHMENT 9, JO  
PAGE 2 OF 4

# PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SEQUENCE NUMBER AF-2-759  
 SUBJECT 28-44R REV 4A CLASS 1  
 LOCATION AREA: IS ELEV: 8'9" pre-inspect ☐  
 in-work ☒  
 past work ☐  
 DR ☐ #       

## DESCRIPTION:

REQUEST PERMISSION TO:

- 1- USE A 194 NUTS AND WASHERS  
INSTEAD OF A325
- 2- TORQUE TO  $\frac{1}{2}$  TIL, PAST SNUG
- 3- FORCE ITEMS (6) & (5) INTO POSITION  
SO THAT BOLTS CAN BE INSTALLED

**VOID**  
 SEE QF-2 760

FOR INFO  
 ONLY

P.P.P. F.E. PW 4/27/83  
 G.C. F.E.       

REFERENCE DRAWING 051373 SH 52

ATTACHMENTS: YES        NO        PAGES (INC. THIS SHEET) 1

AREA ENGINEER:

CONSTRUCTION MAY PROCEED P. Amin

DATE 4-27-83

CONSTRUCTION D.P. REQ'D       

CONTRACTOR RECEIPT

Peter Weiss

DATE       

ATTACHMENT 9 750  
 PAGE 3 OF 4



PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SUBJECT 55S 32R REV 2 SEQUENCE NUMBER TC-1-13S35 CLASS I-C  
LOCATION AREA: 1-GW ELEV: 05 pre-inspect ☐  
in-work ☐  
past work ☒

DCN DRI 302-080  
10-14-83

DESCRIPTION: HGR 55S-32R HAS SOME ADDITIONAL WELD  
E OVER WELD. DUE TO THE COMPLEXITY OF ASIMILATING  
CHANGES OVER THE PAST 5 MONTHS & TWO REVISIONS  
HANGER SHOULD BE ACCEPTED & Q.C. FINAL ACCEPT  
BE DONE TO THE REDLINE ATTACHED.  
WILL THIS BE ACCEPTABLE?

Yes.

P.C.P. F.E. BH 10-13-83  
G.C. F.E. \_\_\_\_\_

REFERENCE DRAWING SK 55S-32R SK 53A-F

ATTACHMENTS YES NO PAGES (INC. THIS SHEET) 9

AREA ENGINEER: R. M. Pared  
CONSTRUCTION MAY PROCEED

DATE 10/13/83

CONTRACTOR RECEIVED BH Hartley DATE 10/13/83

EXHIBIT 4

250

AFFIDAVIT

My name is Timothy J. O'Neill. I am submitting this affidavit to Thomas Devine, who has identified himself to me as the legal director of the Government Accountability Project. I am submitting this statement to rebut erroneous, misleading and material false statements in PG&E and NRC staff responses to allegations I have made of quality assurance (QA) violations at the Diablo Canyon nuclear power plant. Even more important, the QA breakdown has intensified over the last month to its worst level yet, with corresponding intimidation, coverups and falsified records.

I. RESPONSE TO ANSWERS FROM MY EARLIER ALLEGATIONS

In a March 19, 1983 affidavit by Mr. Tressler and others (March 19 aff.), PG&E responded to charges of excessive carbon on stainless steel piping purchased with .04% minimum carbon instead of .04% maximum as required by current industry standard. This was allegation #192 in a March 1984 GAP petition.

1. Initially, PG&E responded by saying there is a .08% maximum. (March 19 aff., p.2). That's not reassuring. NRC NUREG 0691, at 2-2, found that .05% carbon was the threshold for all intergranular stress corrosion cracking (IGSCC) identified in that report. This is particularly significant for

2/5

all lines less than 10 inches in diameter. IGSCC could occur on secondary system lines designed to mitigate situations anticipated by the Final Safety Analysis Report (FSAR) with this carbon content level. All such potentially defective material should be identified.

2. The March 19 affidavit (and NRC staff in private) went on to say that the minimum carbon requirement was to comply with PG&E Specification 8711 and the Westinghouse specification for the main steam system. That answer may be accurate for the Nuclear Steam Supply System (NSSS) due to the high temperatures and pressures in the system. But this steel has been installed in other safety-related systems as well, such as the caustic injection for the containment spray system. This system is essential in the event of a Loss of Coolant Accident (LOCA). There is high residual stress to start with, due to welding and grinding of stainless steel lines. This problem is further exacerbated by the ferrite levels allowed by our specifications. In those instances, the carbon level in the steel is not necessary. Sensitization of the steel due to the carbon level can lead to IGSCC.
3. In item #3 PG&E says that it is not necessary to go beyond industry standards. That is a highly misleading statement. PG&E does not comply with

the current industry standard which is to use 304L stainless steel, which has a .03 maximum carbon level. That level controls carbide precipitation. That was my point. PG&E is working to an old standard which now has been rejected by the industry, using 304 stainless. In fact, even the NRC's 1973 Regulatory Guide 1.44 supports my position explicitly on lines with greater than .03% carbon, unless we can do without the line during an accident and still shut down the plant safely. In fact, as early as 1973 Reg. Guide 1.44 called for intergranular corrosion testing of all stainless steel with carbon greater than .03% carbon. To my knowledge, that has not occurred.

4. In response #2, PG&E is wrong to defend the piping through reference to the reactor coolant system (RCS) and NSSS work. That wasn't Pullman's work. I was talking about secondary systems to mitigate the consequences of an accident. The responses are irrelevant.
5. In response #2, PG&E also asserts that the problem of carbide precipitation is only significant for Boiling Water Reactors (BWR's) and is not a concern at a Pressurized Water Reactor (PWR) like Diablo Canyon. That excuse stops short. It is well-documented that these concerns occur in secondary systems as evidenced by Electric Power



Research Institute (EPRI) reports (Research Project 1570-2, August 4, 1983) and NUREG 0691.

6. PG&E in answer #3 offers another defense -- that the welding has been appropriately controlled for heat input and interpass temperatures. That statement is false. The welding procedures were sufficiently vague and broad that heat input could exceed the limits necessary to control carbide precipitation. See conclusions of T.G. Gooch of The Welding Institute in Metal Progress (March 1984), at page 75. It is enclosed as Exhibit 1. In some cases the procedures are up to three times more than permissible under this analysis. As Dr. Donald Hetzel concluded in the same article "excessive heat inputs during welding are the primary cause of IGSCC, yet under the mistaken belief that productivity will suffer or sometimes because of the less noble incentive of circumventing the quality control department, some companies ignore proper heat input control or make their allowable limits so broad as to be ineffective for protection of the material." (emphasis added). That is exactly what happened at Diablo Canyon, with IGSCC cracking as a possible result.
7. PG&E also was wrong to say that heat input was controlled, because welding inspectors were not trained to monitor heat input. When I tried to check, I was harassed by production supervision

and did ~~not~~ <sup>MINIMAL</sup> receive support from the QA/QC management. Our written engineering specifications require me to monitor this condition, <sup>BY CHECKING INTERFAS TEMP.</sup>

8. In #3 PG&E also said that there were only "a few cases" of stainless steel pipe leakage at San Onofre, which also used lines with .04% or greater carbon. That is a false statement. NUREG 0691 reported cracks (which also have leaks) in the containment spray system, the refueling water pump, and the seal <sup>\*</sup>water return line and discharge line of the charging pumps -- with replacement of ~~all~~ <sup>2/80</sup> piping and twice in the refueling water suction piping, as well as other cases documented in the NUREG at other plants.
9. In response #4, PG&E said that an inspection program would have caught any cracking. That again maybe a false statement with respect to my allegation, because it is apparently irrelevant to my allegation. If PG&E is referring to in-process inspections, it covers the RCS system. I was talking about the secondary lines.
10. In response to GAP allegation #194, that management did not respond when I tried to work within the system, PG&E claimed ignorance of the issue and that, anyway, I misunderstood it. Again, that is false. As far as my "lack of understanding" is concerned, my position is consistent with NUREGS;

JP

Regulatory Guides and recognized industry experts. PG&E's position isn't. The most significant point, however, is that I raised the issue with Pullman QA/QC manager Harold Karner while there on another matter. At the meeting he showed me a February 10, 1984 memorandum from Myron Leppke that attempted to answer my point through references to the in-service inspection program. Obviously PG&E was not ignorant.

11. The February 10, 1984 letter from Myron Leppke inferred that higher carbon grade "H" materials were used at Daiblo Canyon. - If so, PG&E's assertion in answer #2 that "(g)rades such as 304 H have not been used for piping" is false.
12. In PG&E's April 30 response to allegations, specifically GAP #175 (PG&E paragraph #108) the utility asserted that ASME is the requirement for welded studs on the containment liner. In my experience, that is a false statement. ESD ~~273~~ 273 272<sup>75</sup> references AWS requirements for that work.
13. In the next paragraph of the response, PG&E asserted that the welding of liner studs had been qualified in accordance with ASME requirements. Even assuming that is acceptable, ASME QW 403.1 requires that when you use a different "P" number for the metal the procedure must be requalified. But A307 bolts with the heads cut off do not

qualify as acceptable "P" numbers for this work. In fact, A307 is not even listed in QW 422.1 as an acceptable QW material. That is what we used at Diablo Canyon, and there hasn't been any such requalification test to my knowledge.

14. In response to allegations 180-182, in the April 30 submission, at p. 5, PG&E said a December 28, 1983 procedure change -- telling QC inspectors not to write up QC reports on existing welds -- did not remove QA coverage from the welding in question. In answer #10, PG&E said the quality assurance program remains in effect "for all welds." That is a false statement. The authority to oversee these problems was removed from QA/QC and given to field engineers not trained for these assignments -- as demonstrated by their performance in the field.
15. PG&E went on to state that problems with existing welds were covered after inspection of the modification. That also is a false statement. In practice inspectors are not instructed to look at existing work. We have been told repeatedly that it is not our job to verify old work; it already has been done.
16. PG&E said that the procedure revision resulted from a "series of minor variations in welds...." That too is a false statement. The "minor <sup>VARIATIONS</sup> revisions" represented generic Discrepancy Reports (DR) 4678



2/8

for Unit I and 4730 for Unit II, respectively. These generic DR's covered existing work on pipe supports and have been closed since the advent of the new preinspect program.

17. In answer #13 (April 30 letter, p. 7) PG&E said that residual stresses are "self-relieving." That statement is false, and demonstrates a high degree of ignorance if offered in good faith. In fact, that's the reason for post-weld heat treatment (PWHT) -- to eliminate residual stress.
18. PG&E in answer #13 also said that supports "generally" are not "highly restrained," which relieves the significance of residual stresses. That statement is misleading. There are numerous cases of highly-restrained welds. Each instance must be analyzed for significance.
19. In response to GAP allegation #200, PG&E said that the allegation arose from a "lack of understanding" about the QA manager's responsibilities for DR's. In my opinion, it is not the QA management's option to partially void a D.R. by rewriting it. It should be answered on the record, not censored.
20. In answer #30, PG&E responded that "A-307, Grade B, as used at Diablo Canyon" is acceptable as a P-1 material. That is false, as confirmed when a May 31, 1984 Pullman memorandum concluded,

"A-307 bolts with the heads removed are NOT acceptable" (emphasis in original). (It is enclosed as Exhibit 2.) Those bolts were the point of my allegation.

21. The May 31, 1984 memorandum confirmed the accuracy of my allegation. But it has not been applied to any existing work in Unit 1 or Unit II. The explicit point of the memorandum was to stop future violations. It was issued "to prevent recurrence of this discrepancy." Nothing was said about correcting existing work. It is not enough to install these bolts properly for the last few months of a 14 year job. Those converted bolts are on the containment liner of both units and in other safety-related systems. The use is widespread in safety-related systems. All must be replaced.
22. In fact, management tried to prevent distribution of the memorandum.- There was a limited distribution list, and all who received it were supposed to sign and date the event. One of those on the list distributed it "to all QC Insp." (Id.)
23. The May 21, 1984 memorandum also discredits NRC staff conclusions that A-307 at Diablo Canyon "is" acceptable. NRC inspector Gonzalo Hernandez told me on February 6, 1984 that the use of A-307 was all right.

24.

24. On May 17, 1984 PG&E responded further to my allegations. On page 14 PG&E said that Pullman had responded to my concern. That statement is misleading. As of the date of my January 23, 1984 memorandum Pullman had not responded to the issue I raised. The response was not until February 29, 1984.

25. On May 17, 1984 PG&E responded further to my allegations on the carbon level in stainless steel piping. (May 17, 1984 letter, at 4.) In the response PG&E claimed that Mr. Karner informed PG&E of the problem on January 11. That proves that the claim in the March 19 affidavit of Mr. Tresler and all -- that PG&E was ignorant -- was false. (Supra, at \_\_\_\_\_.)

26. In the same answer, PG&E asserted that "Mr. O'Neil's ~~only~~ only response was to inquire whether he was to receive a copy." (Id.) That too is a false statement. In our discussion, I pointed out to Mr. Karner that the carbon levels could lead to ~~minimum~~ wall thickness degradation as well, <sup>ALTHOUGH</sup> THIS IS GENERALLY OF MINOR CONCERN IN NUCLEAR PLANTS, ~~IF~~

## II. CRACKED WELDS ON COMPONENT COOLING WATER LINES.

In order to avoid a serious mistake with potential safety significance, it is necessary to challenge the NRC staff analysis on cracked welds in the Component Cooling Water (CCW) system. At the March 26, 1984 Commission meeting on Diablo Canyon, NRC official Thomas Bishop said that the cracks were not caused by welding with water in these lines, because they met the required preheat temperature of 50°<sup>°F</sup>. He added that the cause of the cracking was unknown. On balance, I have read the June 4, 1984 affidavit of John Christians on this issue and generally agree strongly with his analysis that the NRC is wrong to reject water in the lines as cause for the cracking. Several specific points should be raised to reinforce John's analysis.

27. Initially I question Mr. Bishop's inference that water in the lines is not significant when a 50° preheat temperature is maintained. That is contrary to well recognized metallurgical principles, in my opinion. There is a visible effect on the lines when there is water inside. At 51°, I have observed condensation and dripping. It is also too simplistic a solution to be true.

Pullman knew better, as well. February 10, 1984 memorandum (Exhibit 3) recognized, "The CCW system # 14 is in full operation. This requires a value judgement...if and when an acceptable weld can be made on a line full of water. The rate of flow in a particular line and how the heat dissipation [sic] will affect your weld." The NRC's ignorance raises questions whether Pullman and PG&E kept the staff informed of the risks and potential quality consequences from welding on water filled lines.



28. In my opinion, it is a quality assurance violation to base decisions on "value judgements" for safety-related work. That means that the work was not controlled by procedures, in violation of 10 CFR 50 App. B requirements

29. Contrary to Mr. Bishop 's confidence before the Commissioners that the water was not flowing during welding, Pullman 's Unit II Clearance Coordinator would make no such comment: "I will try to find a way to valve it out--but not drain--a section of this system for your work." (Id.) I have seen welding performed with water flowing in the line and protested the line "clearance." I was told it was not my job to verify line clearance, per QC management.

30. The NRC staff would be less ignorant of the cause for cracking if they had attempted to speak with knowledgeable employee witnesses, before effectively dismissing the concern. I have analysed limited data on the carbon equivalency for the relevant materials and it is susceptible to Hydrogen Assisted Cracking (HAC), which can be caused by embrittlement due to the combined effects of carbon, manganese and silicon. Whatever the cause, the NRC should get the answers before letting Diablo Canyon go to commercial power.

31. This problem has not been systematically addressed. The cracks still are only sporadically caught and repaired, in an uncontrolled manner without necessary documentation. To illustrate, recently an inspector found through MT that three out of four welds had cracks on CCW pipe attachments. This resulted in undocumented repairs ie. removal of cracked welds, but did not lead to review of welding procedures used. Until this occurs, the full extent of cracked

welds on the CCW line will remain unknown. The plant cannot operate with such serious questions unresolved on vital safety related lines.

### III. BOLTING, DESIGN, AND DOCUMENT CONTROL BREAKDOWNS TJO

A number of my colleagues have submitted affidavits on safety deficiencies related to bolting, <sup>DESIGN AND DOCUMENT CONTROL TJO</sup> a certain evidence must be presented in support of their allegations.

32. Support package 921-49, included as Exhibit 4, is a good example of significant document and design control breakdowns at Diablo Canyon. This is classified as a non-safety related (class E, B31.1 code) line, however, it is a radwaste system (gas decay) shared between Units I and II. This line, by definition, falls under B31.7 code requirements for nuclear piping. This support package was presented for work and inspection on 6/7/84. As the inspector, I was to verify location for deletion per memo 0389, page 2 of 48. This memo from PG&E directs Pullman to remove all items except 4, 5, 6, and 7 of a support built per the design shown on QF-2-9876 as referenced on page 15. Pages 17-20 are the quick-fixed drawings of the new design. This was approved on 2/2/84, and revised on 2/3/84 as even the quick-fixed design could not be installed. This is typical of quick-fixed designs, as engineers approving these rarely look at the <sup>FIELD TJO</sup> field conditions. It is also evident by looking at the voided quick-fixes included as pages 23-27 of 48. Page 7 of 48 is an illegal quick-fix as it 's a copy in the actual package, with copied signatures and the word "replacement" as well. This illegal copy is "approved for construction" to the memo from PG&E

(page 2 of 48).

The significant item is that revision 6 was QC accepted on 3/23/84, as evidenced by the "accept" stamp and signatures on page 10 of 48, and the signature on line 13 of field process sheet, page 42 of 48. The support was "accepted by QA pending resolution of reject comments" on 3/28/84, as evidenced by note on back of process sheet (rev. 6), page 43 of 48. There is no mention as to what these "reject comments" are, or of corrective action, in the package. These "comment sheets" are on file with Pullman QA, but never became permanent plant-life documentation with the support packages. The support packages are stamped "QA accept pending resolution of comments," which is tantamount to falsification of documentation. QA reviewers have been fired for refusing to stamp "accept" on deficient packages, and in the words of a QA reviewer, "the reason we are doing this is because PG&E wants to see "accept" stamped on these packages." Pullman has no approved procedure for QA acceptance "pending resolution of reject comments."

On this date this support is on engineering hold (on hold) pending revision. This is evidenced by page 46 of 48 specifying, "layout drilling per DC Rev. 0." It seems strange that a revision 6 drawing is again revised and now called DC Rev. 0 (DC for Diablo Canyon). This revision change, and layout procedure as well, are Bechtel programs. The significant items here are that work was performed to a field initiated (quick-fixed) design, QA/QC accepted to revision 6, and now PG&E is directing per memoranda the removal of most of this recent work to permit a

new design to DC Rev.0. The new design is shown on pages 47 and 48 of 48, and the only significant revision is the size of the concrete anchors. I have seen many supports redesigned in this manner, and I feel it represents a considerable added expense to the cost of the final support.

33. Another problem I have reported internally is layout drilling without following the C-51 form, prior to installation of Hilti-Quick Bolts. Although I agree that holes in concrete are not necessarily harmful, if procedures for filling unused holes are followed, layout operations apparently do not follow PG&E's procedures stated on the C-51 form for drilling in concrete. There was no consistent inspection program to learn whether rebar had been damaged prior to dry packing the holes. This drilling is accomplished by a PG&E memo. As a result, the quality of these installations is indeterminate due to lack of approved procedures.

#### IV. QUICK FIX

Several weeks ago I met with NRC inspector Isa Yin and other agency representatives. They asked me to organize and prepare additional examples of questionable Quick Fix dispositions. I am ready to discuss this further evidence. But a generic flaw in the program should be added to the record.

34. Quick Fixes supposedly were for "tolerance clarification" of in-process work that deviated from ESD 223 (pipe support installation) tolerances and requirements. Quick Fixes were used to accept blatant workmanship deficiencies on "old" and "in process" work. As inspector Yin confirmed with me, deficien-



cies on in process and previously accepted work should be reported through nonconformance reports. In fact, Pullman specifications conflict on this point. One specification, ESD 268 (Deficient Condition Reporting), states these are "deficient conditions." ESD 264 (Process Control and Planning), says these conditions can be "corrected through the normal course of construction." Finally, ESD 240 (Nonconformance Reporting) materially defines a "nonconformance" and "deficient condition" as one in the same. This inconsistency<sup>75</sup> was identified to and investigated by NRC inspector Dennis Kirsch. <sup>IN JANUARY 75</sup> To date, no reply has been received.<sup>75</sup>

#### V. BREAKDOWN OF THE REPORTING SYSTEM

Over the last few months it has become increasingly difficult to write formal reports of QA/QC violations. Several aspects of the policy are summarized below.

35. Over the last few months Pullman verbally has instructed inspectors not to write Discrepancy Reports (DR 's). These instructions have been confirmed by a memorandum. This allows PG&E to remain officially ignorant of quality problems during the last few months before commercial operation. That is when it is most significant for PG&E to keep informed so that it can keep the NRC informed. ESD 240 states "All discrepancy reports will be generated by field QA/QC inspectors or engineers." Field inspectors are instructed to write DCN 's only, and Pullman QA will determine if a DR is necessary. This instruction is per memoranda and not incorporated into any approved procedure, in violation of another approved procedure for incorporating memo-

randa into approved procedures.

36. Pullman management repeatedly has requested inspectors to write up suspected deficient conditions not explicitly defined by procedure on memoranda, rather than through Deficient Condition Notices (DCN 's). This prevents QA/QC violations from being entered at all into the formal reporting system.

37. I also question management 's approach to dispositioning DCN 's. With respect to one DCN questioning serious concrete anchor bolting problems on safety-related work, QA/QC manager Karner refused to process the DCN as a DR in part because the concerns were raised as questions. The question format was used as a courtesy; the point was that serious problems were raised with potential safety significance--10 1/2 inch embedment in twelve inch concrete, which led to increased stress and concrete that fell out from under the bolts. The NRC found this issue serious enough to begin a formal review. By contrast, Mr. Karner seized on a grammatical point to avoid the same problem.

38. Pullman management dispositioned the DCN initially through a letter. A DCN cover sheet later was added but distribution of the DCN was severely limited, contrary to normal distribution procedures to see that all consequences can be identified and trended

39. I also am concerned how problems are being dispositioned when reports are issued. To illustrate why, I have noticed a consistent practice when packages are rejected for reoccurring violation of specifications: change the specification rather than correct the violation. This practice has occurred so

15 28

often that I do not have confidence in the individual decisions. The potential problems have been exacerbated further, since Engineering puts related pending packages with discrepancies on hold until the rules are changed and the work is then accepted.

#### IV. INTIMIDATION AND HARASSMENT

40. On April 27, 1984 PG&E letter (Exhibit 5) to Mr. Karner reported that the Quality Hotline had received numerous calls of Pullman management threats to discipline QA personnel who performed their jobs. On May 11, 1984 Mr. Karner issued a memorandum to "all QA supervisors and leads" (Exhibit 6) not to engage in reprisals. Unfortunately, the memorandum has not solved the deficiencies in organizational freedom which lead to its issuance, deficiencies still may not be formally reported.

#### VII. FALSIFIED RECORDS

41. I am concerned that management may be directing inspectors to perform work in a manner that could result in falsified material traceability records. In my personal experience, the practice occurred for stanchions on safety-related lines. Contrary to requirements, we did not have warehouse traceability records. QA management instructed me to go into the field and just copy onto the records the heat and Purchase Order (PO) numbers from the hardware to reconstruct the warehouse requisition. That is improper; the traceability records are supposed to be based on records from the manufacturer. It is false to fill them out from the field with the notation "reconstructed," and there is no procedure detailing reconstruction requirements. The documentation is supposed to be reflect the accuracy of field trace-

ability markings and without warehouse records the material is indeterminate.

42. I have also seen piping process sheets where identified deficiencies have been changed by "rewriting" the paperwork. After the fact, the identities of welders referenced on piping process sheets were changed so that data on the rod requisition sheets would be consistent. Changing it in this manner doesn't make it accurate but the paperwork looks accurate.

I have identified other specific issues to the NRC staff and Office of Investigations. I will continue to cooperate with specific details to support the allegations raised above, after the NRC makes suitable arrangements to protect my anonymity. My identity has been compromised once after receiving promise of confidentiality from NRC inspector D. Kirsch, until anything <sup>if</sup> went to court. <sup>if</sup> As my career potential is at stake, I must request meaningful confidentiality.

I have read the above <sup>if</sup> 19 page affidavit, and it is true, accurate and complete, to the best of my knowledge and belief.

Timothy J. O'Neill

Timothy J. O'Neill

State of California ( ss.  
County of San Luis Obispo (

Timothy J. O'Neill, being duly sworn, deposes and says:  
I have read the above 19 page affidavit and it is true, accurate and complete to the best of my knowledge and belief.

Timothy J. O'Neill  
Timothy J. O'Neill

Subscribed and sworn to before me on June 7, 1984.



Effie McDermott  
Effie McDermott,  
Notary Public in and for  
the State of California



# Intergranular Stress Corrosion Cracking in Welded, Unstabilized Austenitic Stainless

By Donald E. Hetzel

**A** particularly troublesome area of weld-related failure, especially in the nuclear industry, involves intergranular stress corrosion cracking (IGSCC) of standard grades (other than low carbon types) of unstabilized austenitic stainless steels such as UNS S30200 or S30400. In the handling and welding of these materials, a knowledge of their reactions to heating and cooling cycles is required and must be taken into account if the integrity of the finished product is to be assured.

While there are several unstabilized stainless alloys available, the one most commonly used in this country is UNS S30400. The composition, which will be used for illustration purposes, is: 0.08 C max, 2.00 Mn max, 0.045 P max, 0.030 S max, 1.00 Si max, 18.00-20.00 Cr, 8.00-10.50 Ni, 0.10 N max.

Titanium and columbium are among the more common stabilizers used with austenitic stainless steels and when present, act to inhibit the formation of adverse intermetallic precipitates. The unstabilized alloys do not contain such elements and must be carefully handled during hot work to control the amount of precipitation that will occur.

## Conditions That Promote Intergranular Corrosion

If S30400 is heated to between approximately 800 and 1600 F (425 and 870 C) for a sufficient time, excess precipitation occurs

which results in the alloy losing its corrosion resistant properties and becoming susceptible to intergranular attack in the presence of suitable electrolytes. This creation of a susceptibility is termed sensitization. In other words, if the alloy is heated to within the critical temperature range for a sufficient time, it becomes sensitized or susceptible to the type of attack which can ultimately lead to IGSCC.

**Depletion** — There have been numerous theories for the mechanisms and sequences involved in IGSCC; the most commonly accepted one being chromium depletion. Each grain within the body of a section of austenitic stainless steel has, for practical consideration, a homogeneous composition due to modern mill production practices. To remain stainless when exposed to normal environments in which the material is intended to be used, each grain must maintain approximately 12% minimum chromium content.

Within the sensitizing temperature range, chromium has a high affinity for carbon. The two elements precipitate from the grains to form the intermetallic compound, chromium carbide, at grain boundaries. This leaves the grain surface composition roughly equivalent to that of a nickel steel which while slightly more corrosion resistant than carbon steel, does not have the corrosion resistance properties of iron-chromium-nickel alloys.

Thus, in the presence of suitable electrolytes such as oxygenated water or water containing chlorides, the chromium depleted zones of the individual grains will be subject to attack.

The corrosive attack generally initiates at or near the grain boundaries on the sensitized material's surface in the form of pitting which progresses inward following precipitation paths. This condition is the intergranular attack that leads to IGSCC.

To experience stress corrosion cracking, the material must be subject to some form of tensile loading. In the case of welds, as the molten metal solidifies and drops in temperature, thermal contraction occurs and the weld surfaces will possess a tensile stress equal to the yield strength of the filler metal.

**Electrodes** — The filler metal generally used to weld S30400 is E308 or E309 — electrodes or welding rods having a composition essentially similar to that of the base metal but containing slightly higher chromium and nickel to offset any sublimation across the arc and to reduce the potential of sensitizing the actual weld metal by having more chromium present to tie up available carbon.

These customary filler materials have a minimum yield strength of 35 000 psi (240 MPa) as opposed to 30 000 psi (205 MPa) for S30400. As the weld metal surface is stressed equal to the yield strength of the filler

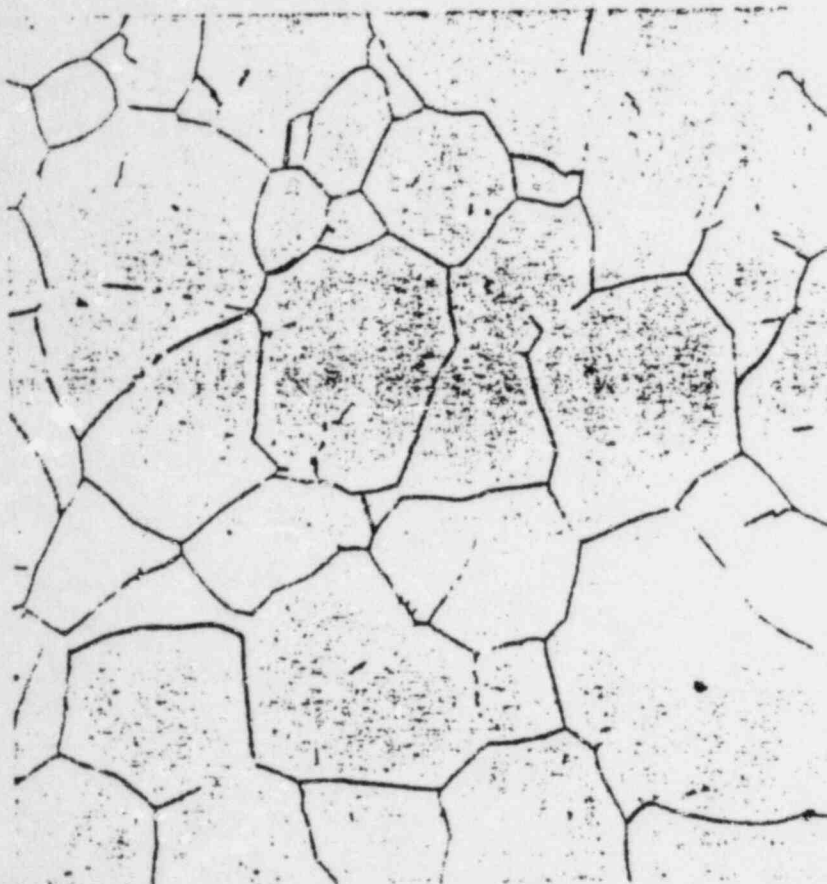


Fig. 1 — Intergranular precipitation typical of what can be present in the HAZ of unstabilized austenitic stainless steels that have been welded using high heat inputs. Breaks in the precipitation paths indicate that the material is marginal, but acceptable for most applications. The author, however, would not recommend using it for certain nuclear power applications such as piping for heated, untreated water. Glyceregia, 200X. (Carpenter Technology Corp.)

metal, the tensile load of the weld metal surface must be applied to the base metal surface adjacent to the weld, or in the heat affected zone (HAZ). Weld-related intergranular attack generally occurs in this same zone and acts to reduce the section thickness on which the tensile load will be applied. This tensile load, in addition to any service loads that may be applied to the weld area, tends to promote minute separation of grains in the attacked area acting in conjunction with an internal load being placed on the grains from corrosion by-products (generally resulting from an electrochemical reaction). The combined action causes fresh surfaces of the grains to be exposed to corrosive attack until ultimate failure from IGSCC occurs.

A general but far from absolute rule is that to experience IGSCC, three minimum conditions must be present and act concurrently: a tensile load of 14 000 psi (95 MPa), a temperature of 150 F (65 C), and 100 ppm chloride or equivalent solution. I have, however, repeatedly seen IGSCC under conditions substantially below these values.

#### Sensitization Dependent On Time-Temperature

Chromium carbide precipitation occurs whenever unstabilized austenitic stainless steel is welded. However, the material should not be considered as sensitized until the point is reached where precipitates surround the individual grains.

Breaks in precipitation paths will generally permit only a highly localized attack within the grain zone adjacent to the precipitate.

Sensitization is a time-temperature dependent function. That is, the longer the material remains in the critical temperature range, the more chromium carbide will be formed up to the practical limits imposed by the percentages of chromium and carbon available.

It is obviously important to perform necessary hot work such as welding and then cool the material through the critical temperature range as rapidly as possible to control the amount of precipitate that can form. Inasmuch as any preheat and interpass temperatures tend to retard cooling rates, qualified welding engineers tend to keep these parameters low — generally any preheat used not exceeding 100 F (40 C) and an interpass temperature maximum of 350 F (175 C).

Welding arc temperatures are about 8000 F (4400 C), except in plasma arc welding which takes place at around 14 000 F (7500 C). While these temperatures (far above the melting point of steel) have no direct way of creating material sensitivity, they do heat the unmelted portion of the material in the weld zone — that part of the HAZ being naturally heated to within the critical range but never exceeding it. The HAZ is subject to the longest exposure and as may be expected, most weld-related IGSCC occurs in it.

Procedures — Weld-related sensitization has also been caused by adding carbon to the weld and HAZ through improper cutting or gouging practices, improper preweld cleaning, and use of improper shielding gases or additives. This involves providing additional carbon with which the chromium can react, and in severe cases where much carbon is present, the individual grains of the base metal can be nearly void of

chromium on completion of the reaction.

A common example of improper cutting or gouging is the use of a carbon arc on stainless steel without following up with a grinding operation to remove carbon byproducts. Improper cleaning usually results in attempting to weld through residual paints, oils, or similar compounds (hydrocarbons). Improper shielding gas or gas additives generally involves use of CO<sub>2</sub>. Carbon dioxide dissociates under influence of the arc and a portion of the carbon enters into the weld metal and HAZ.

Each of these examples presents case histories of major failures and serves to illustrate that by not using proper practices both prior to and during welding, the potential for sensitization can be greatly increased independent of the actual welding operation.

### Prevention-Correction Measures Are Available

Fortunately, there are methods of preventing sensitization during welding, and methods of correcting sensitization although this can prove nearly impossible, depending on weldment type and configuration. Prevention is always more economical.

T.G. Gooch of The Welding Institute, Cambridge, England, has performed extensive tests in welding unstabilized alloys. His studies reveal that the amount of heat input per unit length of weld that can be used without damaging the stainless steel is a function of carbon content.

For a carbon content of 0.06%, for example, a heat input threshold of approximately 68 kJ/in. (2.7 MJ/m) was established, but when carbon reached the maximum of 0.08%, the threshold dropped dramatically to approximately 40 kJ/in. (1.6 MJ/m).

To provide a suitable safety factor, qualified welding

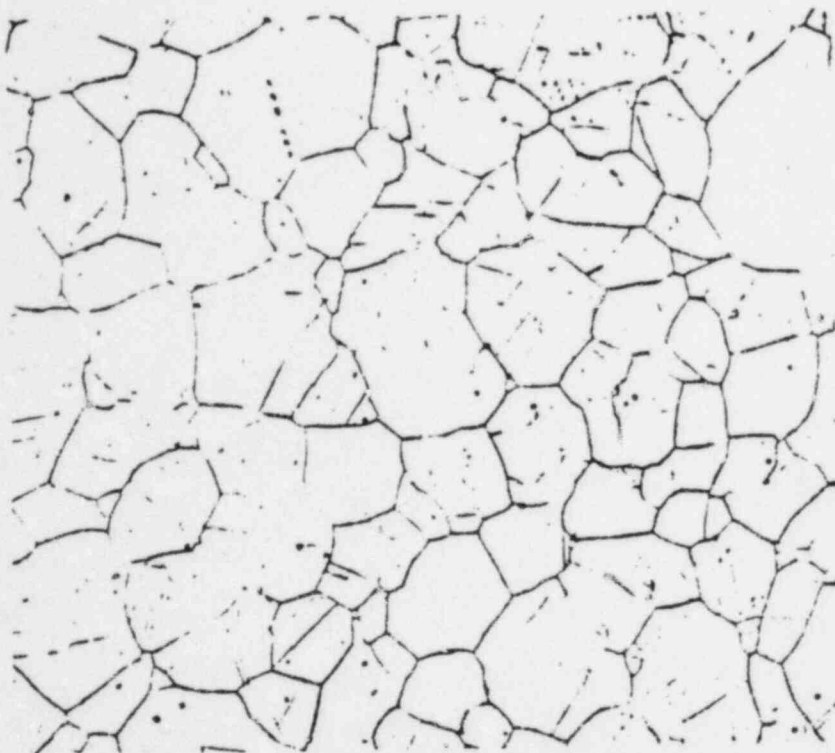


Fig. 2 — Fully annealed UNS S31600 in the unwelded condition. Microstructure is typical of as-received unstabilized austenitic stainless steel. Material in this condition is suitable for most nuclear applications except in environments where rapid attack of the steel would be expected. When welded, a certain amount of carbide precipitation will occur; the amount largely depending on the magnitude of the heat input. Specimen was deeply etched to enhance photoreproduction. Glycergia. 750X. (Westinghouse Hanford Co.)

engineers specify parameters in their procedure specifications that will achieve a maximum heat input of 30 to 35 kJ/in. (1.2 to 1.4 MJ/m) for the unstabilized alloys. This heat input is determined by:

$$H_1 = \frac{60(IE)}{V}$$

Where  $H_1$  = heat input in joules per inch,  $I$  = welding amperage,  $E$  = welding voltage, and  $V$  = welding travel speed in inches per minute.

Assuming typical welding parameters for a 1/8 in. (3.2 mm) in diameter E308 electrode — 120 A, 24 V, and 8 in./min (3.4 mm/s) travel speed — use of the formula would give a heat input ( $H_1$ ) of 21.6 kJ/in. (850 kJ/m), a value comfortably below the threshold limit for sensitization.

(Heat input in kJ/m can be obtained directly by using the equation  $IE/V$ , where  $V$  is in mm/s.)

The travel speed in the above example is the forward travel of

the electrode used in making the welding deposit. Speeds of this magnitude indicate welding is being performed via the stringer bead technique — the practice generally recommended by research agencies of national and international reputation for welding unstabilized austenitic stainless steels.

This is a sound recommendation and does not adversely affect productivity because for a given set of operating parameters, welding electrode burnoff rates and consequently joint fill will be essentially the same regardless of whether stringer beads or weave beads are used.

Heat Treat — Depending on the type of weldment, under certain conditions it is possible to unintentionally exceed the sensitization threshold limits when joining unstabilized alloys. When sensitization has occurred during welding or other heat processing, the condition



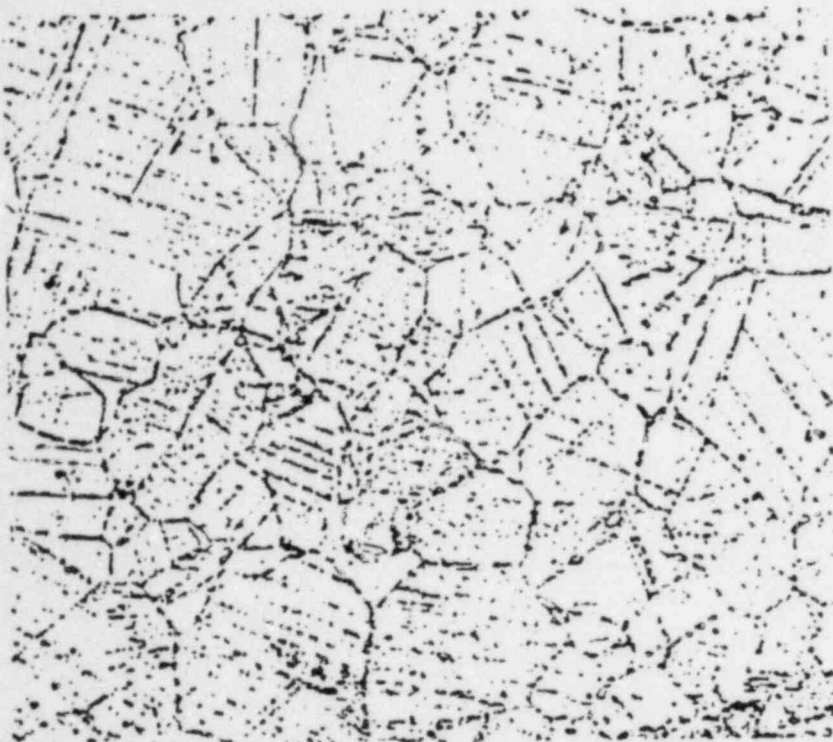


Fig. 3 — Highly sensitized UNS S31600. Carbide precipitation is present not only at grain boundaries but also within grains along twins. There is also evidence of small amounts of what may be the brittle sigma phase. Microstructure is typical of what occurs in the HAZ of unstabilized austenitic alloys when welded using excessive heat inputs. The author would not consider material in this condition suitable for use in commercial nuclear power applications. Specimen was deeply etched to enhance photoreproduction. Oxalic acid, 750X. (Westinghouse Hanford Co.)

can be reversed by heating the material to the point where the chromium carbides dissociate and redissolve in the grains of the material.

This is done by solution heat treating: heating to approximately 1900 to 2000 F (1040 to 1095 C) and soaking for a time sufficient to permit the carbon and chromium to return to solution. After the soak, the material is water quenched to prevent reprecipitation. The length of the elevated temperature soak is a function of material thickness and size. Appropriate time intervals for specific applications have been published in various metallurgical texts.

#### It's Possible to Use Sensitized Stainless

Precipitated or sensitized stainless steel has mechanical properties reasonably similar to those of material in the

undamaged state; only the corrosion resistance is adversely affected. If the material is to be used for certain types of service, sensitization or its potential becomes unimportant and can be ignored. A typical example is sodium cooled reactor applications where the material will be continuously maintained in an inert gas (generally argon) atmosphere. This is a superclean environment, and inert gas by itself cannot create the conditions necessary to promote the initial attack on the material.

Liquid sodium at normal reactor operating temperatures of 400 to 1200 F (205 to 650 C) has no apparent effect, adverse or otherwise, on the argon-protected sensitized stainless steel. Thus, unstabilized austenitic stainless steel weldments which have been produced for such service and have been sensitized need protection from adverse

conditions only during the period from completion through installation in the protective environment.

Surprisingly enough, there is another condition under which sensitized stainless steel has been used without adverse results: for continuous service within the critical temperature range, generally in essentially mildly aggressive environments that do not permit rapid attack at grain boundaries.

For IGSCC to initiate and continue, it is necessary that a precipitate path be present along the grain boundaries. If this path becomes interrupted, intergranular attack will generally not progress beyond the interruption. (There are, of course, exceptions to this, but these generally involve more aggressive environments where supplemental corrosion mechanisms are present.)

In long term exposure to the medium and upper temperatures in the critical temperature range, carbide precipitates that normally surround the grains in a continuous path will often tend to spheroidize locally, creating the path interruptions needed to permit the sensitized material to perform nearly as well as undamaged material.

#### Practices, Misconceptions Cause Many Problems

Because the phenomenon just described is fairly common, the uninitiated are frequently led to believe that heat input control is unnecessary with unstabilized alloys regardless of the type of service involved. This mistaken belief contributes heavily to the frequency of IGSCC in this country. It can be an unsafe assumption to rely on spheroidization to make up for poor handling of the alloys because this phenomenon simply does not occur 100% of the time. Service conditions need to be very carefully evaluated before heat input control is discontinued.

We have the necessary



scientific and technical knowledge on hand to properly handle unstabilized austenitic stainless steels in welded fabrication and reduce IGSCC failures to near zero regardless of the industry. The marine industry, for example, experiences relatively little IGSCC.

Excessive heat inputs during welding are the primary cause of IGSCC, yet under the mistaken belief that productivity will suffer or sometimes because of the less noble incentive of circumventing the quality control department, some companies ignore proper heat input control or make their allowable limits so broad as to be ineffective for protection of the material.

**Testing** — Generally, when a potentially adverse condition exists, some practical non-destructive means of detection is developed. This was not the case for sensitization until quite recently when a seminon-destructive, metallographic technique evolved.

Prior to this only comparative type testing was available, such as the British potentiostatic test, chemical testing per ASTM A262 Practices A through E (oxalic acid, ferric sulfate-sulfuric acid, nitric acid, nitric-hydrofluoric acid, and copper-copper sulfate sulfuric acid testing), or traditional metallographic testing.

In all cases (except metallographic), representative coupons equivalent to the material in question are used for test samples. The relative size of the coupons required generally precludes removing test samples from weldments.

Metallographic testing will reveal the presence of sensitization via the examination of small specimens that can be removed from the weldment. However, with the advent of portable metallographic microscopes and electroetching equipment, it is now possible to polish, etch, and examine a small spot right on the weldment

without having to remove a test specimen.

This method is the most reliable available today, but must be considered seminon-destructive.

Much research is needed to develop truly nondestructive means for detecting sensitization in critical applications to avoid putting damaged material into service.

**Experience** — In work that I have directed, there have been no cases of weld-related IGSCC reported even though some applications were in highly aggressive environments including nuclear waste handling systems. (It should be noted that this is limited to applications where the unstabilized alloys should be compatible with the service environments. Should weld-related IGSCC be experienced under such circumstances, it is generally localized and in the HAZ. One would not expect stainless steel, welded or otherwise, to provide suitable service where it is exposed to an electrolyte known to rapidly attack the material and when such an attack occurs, it is not generally localized.)

Some of this welded unstabilized steel has been in service for more than 15 years, and while these welds and weld zones have shown no evidence of weld-related IGSCC failure, adjacent weldments of the same material — including some from the same heats but installed by others — have experienced gross failures, mostly in the HAZ. This indicates the value of proper methods and techniques in handling and welding unstabilized alloys.

Interestingly, the original installations were made at a productivity level equaling or exceeding that of the other contractors, demonstrating that no sacrifice in productivity should occur due to use of proper practices.

**Coatings** — I have observed IGSCC in weldments produced

by the SMAW process that is believed to be the result of moisture absorption in the electrode coating.

This flux coating decomposes during welding to form a protective gas shield around the molten metal. Common coatings for stainless steel electrodes are the basic lime or titania types which can be hygroscopic at temperatures below the vapor point of water. The coatings contain fluorspar which acts as a cleaning agent ahead of the arc during welding.

It is my opinion that IGSCC of welds made using proper welding practices is likely the result of some type of hydrofluoride reaction with the weld and base metal. In this case, the hydrogen element would derive from moisture absorbed by the electrode coating and fluorine would be generated via some reaction involving the fluorspar.

I have not performed any tests to prove or disprove this theory. However, it has been discovered in practice that welds produced using electrodes that were stored in ovens maintained at 250 F (120 C) min to keep the coatings dry, do not experience the same IGSCC problems when good welding practices are followed. This appears to be a good topic for a research project.

There is also room for much additional meaningful research on the handling and welding of unstabilized austenitic stainless alloys. With improvements in nondestructive testing technology and in over-all quality assurance coupled with the knowledge being gained through ongoing basic research, it is anticipated that any present mishandling of the alloys leading to IGSCC will become even more unprofitable.

*For More Information:* You are invited to contact the author directly by letter or telephone. Dr. Hetzel is a consultant specializing in welding, joining, materials, and fabrication. He may be reached at 15 Meadowlakes, Clinton, Ill. 61727; tel. 217/935-8793.

## INTEROFFICE CORRESPONDENCE

DATE MAY 31, 1984  
TO DISTRIBUTION  
FROM H. KARNER  
SUBJECT ACCEPTABLE STUD MATERIALS FOR CARBON STEEL WELDING (REF: DR 5891)

*Dist. TO ALL QC Insp QA*

DR 5891 identified cases where A-490 and A-193-B7 stud materials, which are not listed in ASME Section IX or AWS D1.1, were welded with a carbon steel welding procedure qualified for welding ASME P-1 materials and D1.1 prequalified materials only.

To prevent recurrence of this discrepancy, only the following stud materials shall be considered acceptable for welding with carbon steel welding procedures:

- 1) A-36 bar stock
- 2) Nelson studs
- 3) A-307 Gr B studs (A-307 bolts with the heads removed are NOT acceptable).

All other stud materials will require written QA/QC approval prior to welding with a carbon steel WPS.

*Harold W. Karner*

Harold W. Karner  
QA/QC Manager

HWK:CN:sam

### Distribution:

<u>QC</u>	<u>QA</u>	<u>Engineering-Piping/ Hangers/Rupture Restraints</u>
Engler	Cochrane	Kapsalis
Charboneau	Prewitt	Cornish
Neary	Kimmel	
Clark	McJilton	<u>Superintendents-General Foremen</u>
J. Watson	Hosman	
Nolle	McGregor	

Mokry

~~All individuals on distribution shall sign, date and return a copy of this memorandum upon receipt.~~

Signature

Date

CCW SYSTEM #14 CLEARANCE REQUEST  
CLEARANCE # 14-5265-84  
MADE BY C. COUNTER DATE 2-10-84 CHECKED BY \_\_\_\_\_ APPROVED BY \_\_\_\_\_

THE CCW SYSTEM #14 IS IN FULL OPERATION.

THIS REQUIRES A VALUE JUDGEMENT BY P3 & PTEC FIELD SUPERVISION, IF AND WHEN AN ACCEPTABLE WELD CAN BE MADE ON A LINE FULL OF WATER. THE RATE OF FLOW IN A PARTICULAR LINE AND HOW THE HEAT DISSIPATION WILL AFFECT YOUR WELD. SPRINKLER WELDERS MUST WORK ALL THEIR LUGS ON CARBON STEEL LINES FULL OF WATER -- BUT WITH ONLY A MINOR FLOW RATE.

REVIEW ALL YOUR SYSTEM #14 HANGER PACKAGES AND PULL OUT THE REVOKED CLEARANCE #14-5265-84. SEND THEM BACK TO ME AND I WILL TRY TO FIND A WAY TO VALVE OUT -- BUT NOT DRAIN -- A SECTION OF THIS SYSTEM FOR YOUR WORK.

AS YOU KNOW MANY HANGERS WILL REQUIRE ATTACHMENTS ON MAIN SUPPLY AND RETURN HEADERS SO ANTICIPATE A LONG WAIT FOR THIS WORK SINCE THE CCW SYSTEM JUST COMPLETED A LENGTHY OUTAGE AND ANOTHER SHUTDOWN WILL NOT BE FOR MANY WEEKS.

I WILL NOTIFY YOU OF HANGERS THAT CANNOT GET APPROVAL AND THAT THEY WILL BE HELD IN A FILE TO WORK WHEN THE NEXT CCW OUTAGE IS MADE. PLEASE MAKE A NOTE OF THEM SO NO FALSE EXPECTATIONS ARE GENERATED FOR EARLY COMPLETIONS OF THOSE SUPPORTS.

THANKS

Chuck Counter #3070  
UNIT II CLEARANCE COORDINATOR (H&S)



# PIPE SUPPORT INSTALLATION WORKLIST

HANGER NO 921-49 SYST        PRIORITY         
ELEV: 55 AREA: H DWG. NO.        SHT.         
DCN NO.        REV. 6  
FIELD ENGINEER: [Signature] DATE: 5/30/81  
REVIEWED BY:        DATE:       

## INSTRUCTIONS TO CRAFT

THE FOLLOWING WORK IS REQUIRED TO COMPLETE THIS PIPE SUPPORT:

- 1) O.C. TO VERIFY LOCATION
- 2) REMOVE ENTIRE SUPPORT AND SLAB EXCEPT  
ITEMS (4) (5) (6) & (7) (TYPE (12) ANCHOR PIPE ATTACHMENT)  
CUT ALL ANCHOR BOLTS FOR BASEPLATE ITEM (12)  
FINISH TO CONCRETE. ANCHOR BOLTS FOR ITEM  
(1) SHOULD BE PULLED FROM CONCRETE FLOOR.  
3) CONTACT FOLEY FOR GROUT REMOVAL

NOTE: DO NOT DAMAGE ITEMS (4) (5)  
(6) & (7)

FOR INFORMATION  
DATE: 5/30/81  
BY: [Signature]

SHT.        OF



PULLMAN MEMORANDUM # 0389

TO: P. Stieger/H. Karner/S. Cornish  
FROM: R. Meredith/G. Thomas  
OF: General Construction  
AT: Jobsite EXT: 3504

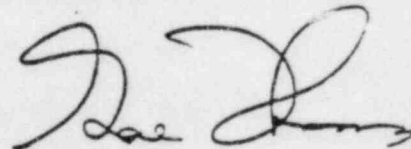
DATE: May 21, 1984

SUBJECT: Hanger Removal  
#921-49

ATTENTION: B. Oldenkamp  
D. McGrew

Reinspection layout of Hanger #921-49 DC-2-S22498 Rev. 0, requires the removal of all items except items 5, 6, 7 and 8 (the type 12 anchor) of the previous revision. Reissue Hanger #921-49 Rev. 6 to remove the above items.

Make contact with PTGC Coordinator, John Rhodes, after completion of removal.



Gene Thomas

Originator: J. Vogt

cc: C. Dougherty  
J. Schryver  
J. Rhodes

jmu

**FOR INFORMATION  
ONLY**

FILE CA  
MCGREW  
FLEDDERMAN  
WEINSTEIN  
EVERLY

KAPSALIS  
SACCOCCIA  
MOKRY  
PACIFICO  
ROBERTS

**RECEIVED**

MAY 22 1984

PULLMAN POWER PRODUCTS  
AVILA BEACH, CALIF  
JOB #7177

Pu110038

PAGE 2 OF 48

# PIPE SUPPORT INSTALLATION WORKSHEET

RANGER NO 921-49 PRIORITY             
 ELEV. 55 AREA: H DWG. NO. 500921 SHT.             
 DCN            REV. 6  
 FIELD ENGINEER: RAO DATE: 4/4/89  
 REVIEWED BY:            DATE:           

## INSTRUCTIONS TO CRAFT

THE FOLLOWING WORK IS REQUIRED TO COMPLETE THIS PIPE SUPPORT:

CUT AS SHOWN FOR PIPE WORK. RETURN  
 TO DAO/JT WHEN COMPLETE. ~~FIELD~~  
~~FOR NEW BOLT EXAM 100EG.~~

HOT!!

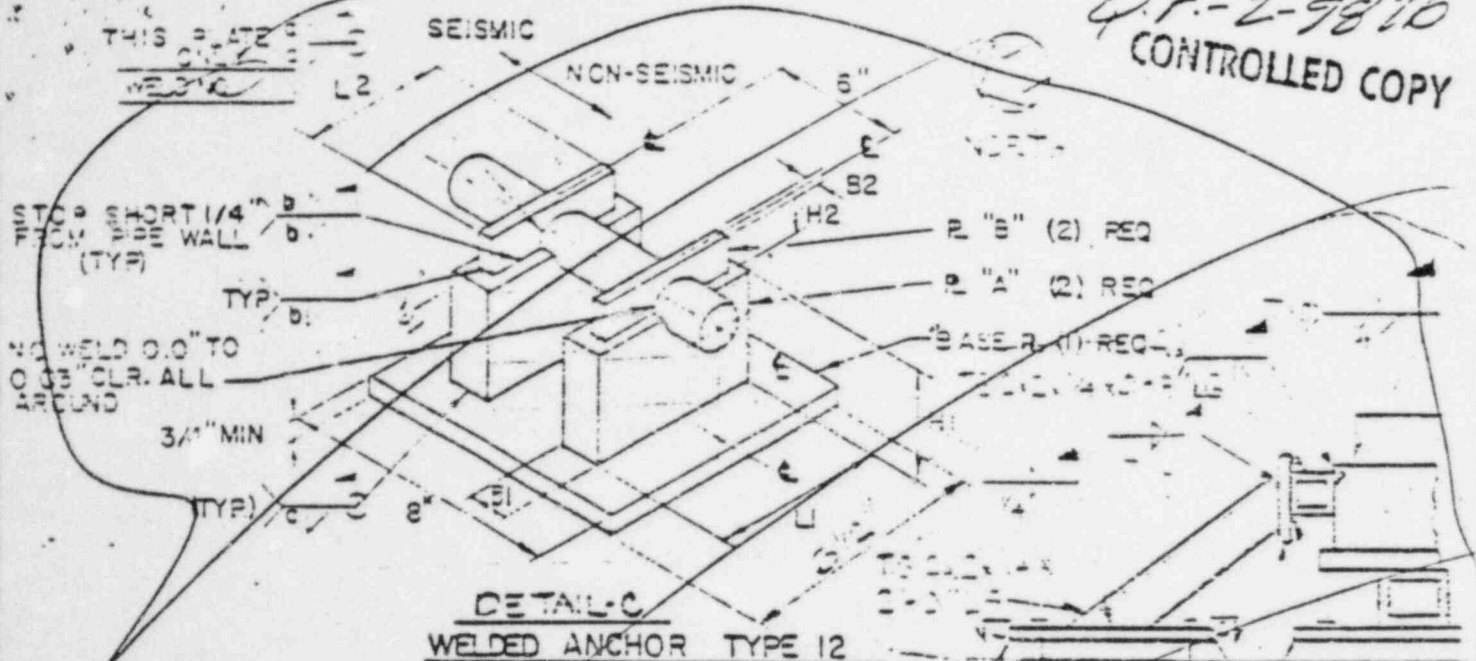
ASAP!!

IF WORK ON PIPE COMPLETE  
 REINSTALL \* 3X3X3/8 X 11-0" LG.  
 PER Q.F.-2-9876.

NOTE: BACK OFF BOLTS PRIOR  
 TO WELDING IN BASEPLATE  
 & RETORQUE 1/2" Ø KNICK BOLTS  
 TO ALIGN KNICK BOLTS TO GO F/105

FOR INFORMATION  
 ONLY

4/11/84 SEE  
Q.P.-2-9810  
CONTROLLED COPY



PIPE Ø	THK	WELD SIZE			PLATE "A"			PLATE "B"		
INCHES	IN	a	b	c	L1	H1	B1	L2	H2	B2
(SCH 80)		IN	IN	IN	IN	IN	IN	IN	IN	IN
2" Ø (2.375)	.218	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1 1/2"
1 1/2" Ø (1.9)	.2"	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1 1/2"
1" Ø (1.315)	.179	1/4"	3/16"	5/16"	6"	3 1/2"	1 1/4"	4"	3"	1 1/4"
3/4" Ø (1.050)	.154	1/4"	3/16"	5/16"	5"	3 1/2"	3/4"	4"	3"	1 1/4"

NOTE:

- ANCHOR TO BE USED FOR SCH 80 OR LESS.
- PLATE MATERIAL FOR CARBON STL PIPE IS STEEL A-515 GR. 65
- PLATE MATERIAL FOR STAINLESS STL PIPE IS STEEL A-240 TYPE 304
- ANCHOR TO BE USED ONLY AT CODE BREAKS BETWEEN PG AND E DESIGN CLASS

I AND II PIPING ONLY

- ANCHOR DESIGN, TYPE 12 IS BASED ON THE MAX. POSSIBLE LOADS THEREFORE, ALLOWABLE LOADS ARE NOT NECESSARY

- SUPPORTING STL AND WELD TO THE ANCHOR TO BE QUALIFIED BY THE ENGINEER

7. CUT R "A" TO SUIT

APPROVED FOR  
CONSTRUCTION

4/24/84  
DATE

PACIFIC GAS & ELECTRIC CO.  
APPROVED FOR  
CONSTRUCTION  
ENGINEERING DEPARTMENT

DATE

UNLESS OTHERWISE SPECIFIED

REF DWG. EOC 221 SYS 2

CLASS E E UNIT 2 AREA 1

ELEV 55' - 0" DESIGN

ISO 24-000 DATE 8-5-81

ANCHOR - PER 66-4E DWG.  
NO. C-9243 6-27 REV 14

DATE 8-5-81  
DWG. No. 921-49 REV. No.

DATE 8-5-81

DWG. No. 921-49 REV. No.

DATE 8-5-81

DATE 8-5-81



500-1037

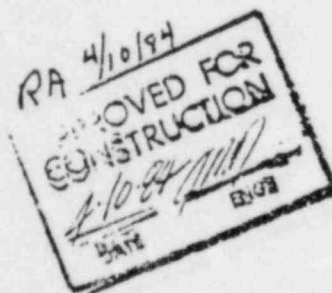


921149  
REV 6

RF -2- 9376  
① RFS 2-3-84

SH-1-1-1

Item	Qty	Bill Of Materials
✓ 1	1	R 1/2" x 11" x 1'-6" LG. W/ (6) 3/16" Ø HOLES C.S. A36
✓ 2	10	1/2" Ø HILTI Kwik Bolt W/ 2 1/4" MIN. EMB.
✓ 3	1	T.S. 4" x 4" x 3/8" x 1'-1 1/2" LG. C.S. A500 GR. B
✓ 4	1	R 3/4" x 8" x 8" C.S. A515 GR. 70
✓ 5	2	R 1 1/4" x 3 1/2" x 6" C.S. A515 GR. 70
✓ 6	1	R 1/4" x 3" x 4" C.S. A515 GR. 70
✓ 7	1	R 1/2" x 3" x 5" C.S. A515 GR. 70
✓ 8	1	<del>4 3" x 3" x 3/8" x 1'-8 1/2" LG. C.S. A36 11" LG.</del> 2ND 4" LG. PER ASS
✓ 9	1	T.S. 2" x 2" x 1/4" x 7 1/2" LG. C.S. A500 GR. B 6.6.2 .2(5)
✓ 10	1	R 3/4" x 3" x 3" C.S. A36 / 1'-10"
✓ 11	1	T.S. 2" x 2" x 1/4" x 2'-0" LG. CUT TO SUIT C.S. A500 GR. B
✓ 12	1	R 3/4" x 8" x 8" W/ (4) 3/16" Ø HOLES C.S. A36
✓ 13	1	NPS-PUS-025



FOR INFORMATION  
ONLY

RECEIVED JAN 12 1964

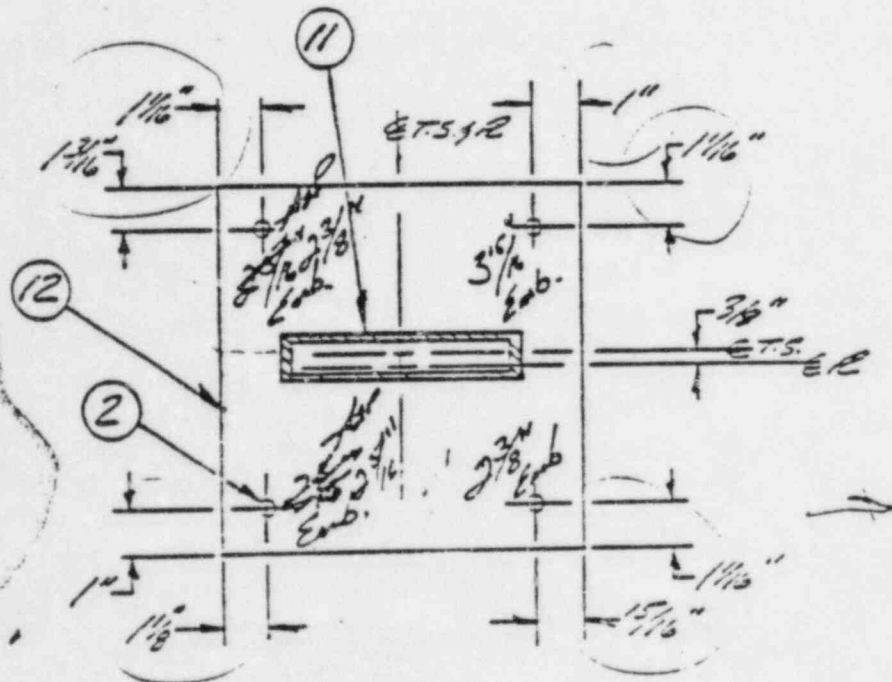
NSA SUPPORT DESIGN REFERENCE CLASSIFICATION FORM *547 1054*

SEQUENCE NUMBER QF-2-9876

☐ pre-inspect  
☐ past pre-inspect  
☐ during installation  
☐ after installation  
☒ other:

PROBLEM: SUPPORT CANNOT BE ☐ during installation  
☐ after installation  
 INSTALL PER DESIGN DUE TO ☒ other;  
DESCRIPTION: EQUIVALENT HANGER INTERFERENCE; COUPLING  
 LENGTH (17 1/2") WILL NOT ALLOW FOR DESIGN  
 PIPE ATTACHMENT WELD.

INSTALL AS  
SHOWN.



SECTION C-C

FOR INFORMATION  
ONLY

U.S.S. # 211/84  
C.C. #           

222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 11

[illegible]

2000-01-01

Robert M. [illegible] 2264







DATE	DDP VERIFIED
2/29/84	M.C.

# ACCENT

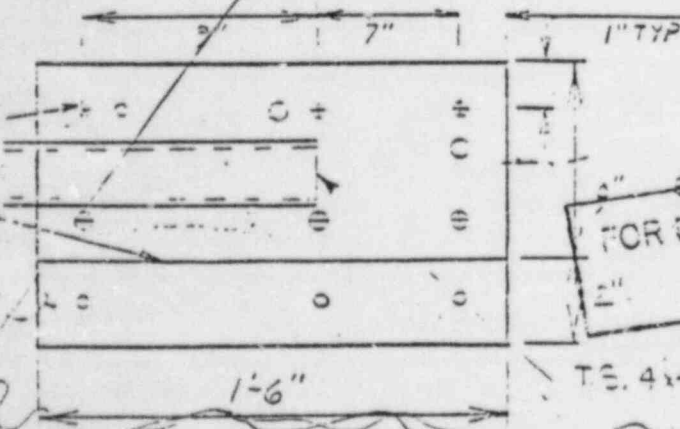
FCV 409

OR INFORMATION  
CONTROLLED COPY

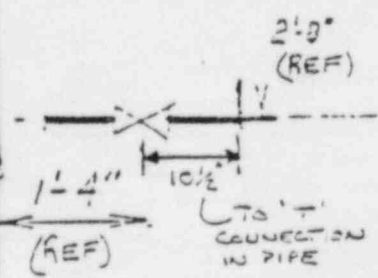
PACIFIC GAS & ELECTRIC CO.  
APPROVED FOR  
CONSTRUCTION  
ENGINEERING DEPARTMENT  
DATE SEP 20 1983  
BY *V. L. [Signature]*

Hilti HD1 1/2"  
(6.250'D)

NOTE: FIELD FIT ANGLE ON R2 T  
ALLOW FOR HOLE DRILLING.  
SET 'U' BOLTS ON PIPE COUPLING.



FOR DECRYPTION  
ONLY



### LOCATION PLAN

1 CONFIRMED DRAW 2 CHANGED TO SIZE 3 INTO 1 TO PROVIDE AREA REQ. 4 3-2-78

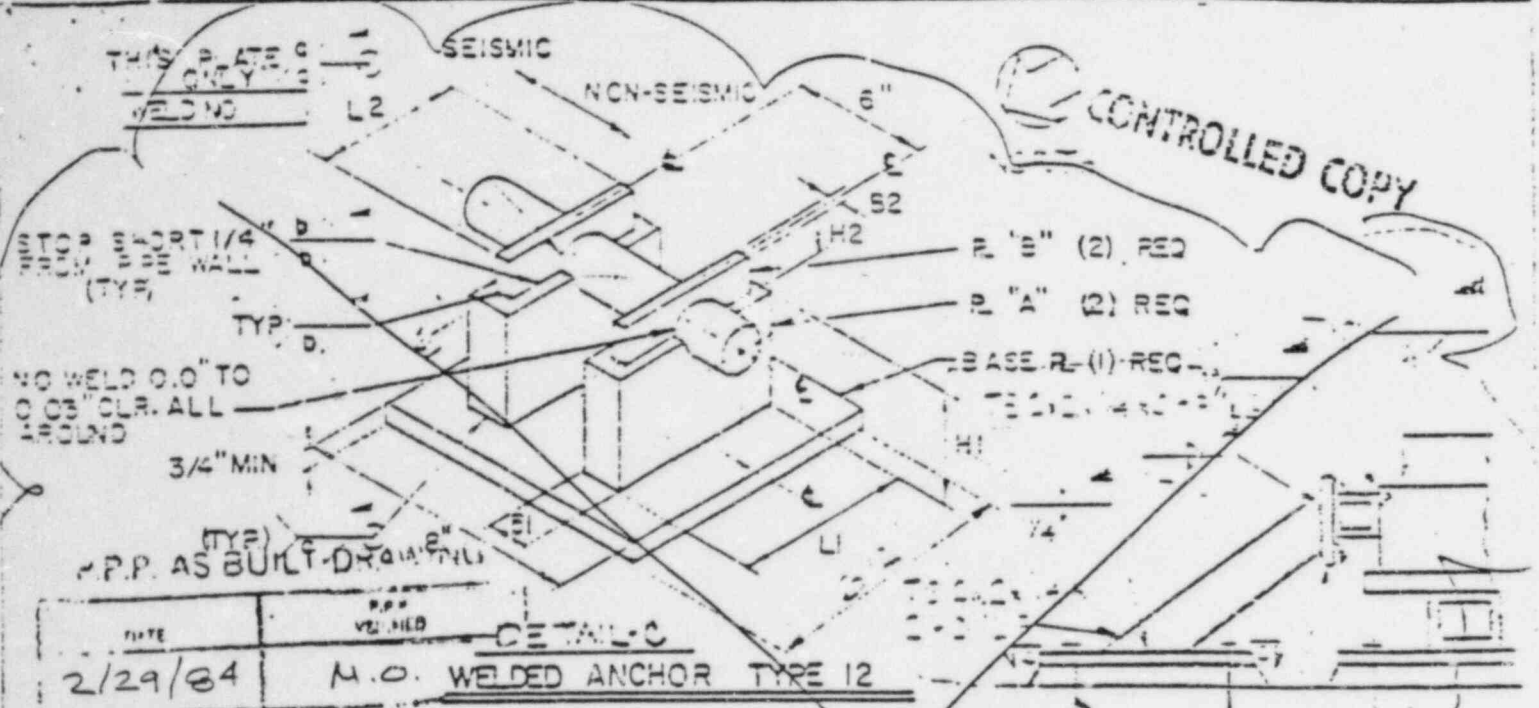
UNLESS OTHERWISE SPECIFIED

REF. DWG. 500921  
SYS. 24 UNIT 2 AREA H  
CLASS E ELEV 22 DESIGN K2  
ISO 24 - 2 - DATE 10-8-70

## PIPE SUPPORT

DWG. NO. 921-49  
REV. NO. 6 SHT 1 OF 2  
DATE: 12-15-61 6  
1050

Welds: 1. fillet all around  
 U-bolts: field-fit, nut each side.  
 1 1/2" clearance, spacers per PG&E  
 Dwg. 049243 Int. 22  
 T-nodes: per PG&E Dwg. 049243  
 Int. 20 PAGE 10 OF 48



DATE: 2/29/84  
M.O. WELDED ANCHOR TYPE 12

PIPE Ø INCHES SCH 80	THK IN	WELD SIZE			PLATE "A"			PLATE "B"		
		C	D	E	L1	H1	B1	L2	H2	B2
		IN	IN	IN	IN	IN	IN	IN	IN	IN
2" Ø (2.375)	.218"	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1 1/2"
1 1/2" Ø (1.5)	.2"	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1 1/2"
1" Ø (1.315)	.179"	1/4"	3/16"	5/16"	6"	1/2"	1 1/2"	4"	3"	1 1/4"
3/4" Ø (.75)	.154"	1/4"	3/16"	5/16"	5"	3 1/2"	3/4"	4"	3"	1 1/4"

NOTE:

- ANCHOR TO BE USED FOR SCH 80 OR LESS.
- PLATE MATERIAL FOR CARBON STL PIPE IS STEEL A-515 GR. 65
- PLATE MATERIAL FOR STAINLESS STL PIPE IS: STEEL A-240 TYPE 304
- ANCHOR TO BE USED ONLY AT CODE BREAKS BETWEEN PG AND E DESIGN CLASS I AND II PIPING
- ANCHOR DESIGN, TYPE 12 IS BASED ON THE MAX. POSSIBLE LOADS THEREFORE, ALLOWABLE LOADS ARE NOT NECESSARY

FOR INFORMATION ONLY

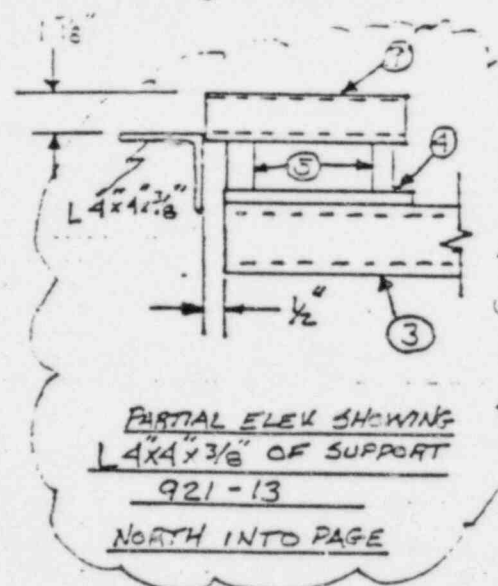
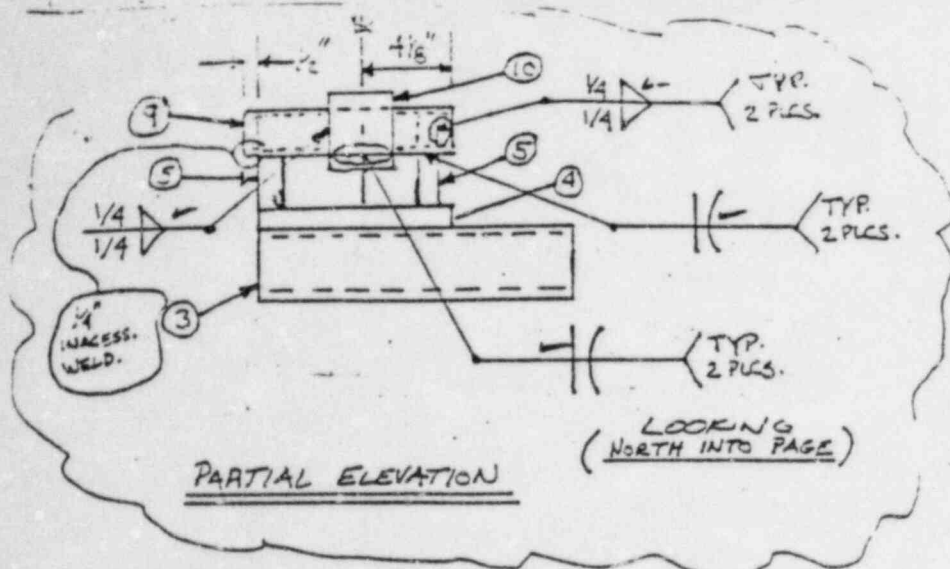
6. SUPPORTING STL AND WELD TO THE ANCHOR TO BE QUALIFIED BY THE ENGINEER

PACIFIC GAS & ELECTRIC CO.  
APPROVED FOR CONSTRUCTION  
ENGINEERING DEPARTMENT

DATE: 02-20-1983

UNLESS OTHERWISE SPECIFIED

REF DWG. \_\_\_\_\_ SYS \_\_\_\_\_  
CLASS \_\_\_\_\_ UNIT \_\_\_\_\_ AREA \_\_\_\_\_  
ELEV \_\_\_\_\_ DESIGN \_\_\_\_\_ DWG. No. \_\_\_\_\_ REV. No. \_\_\_\_\_  
ISO \_\_\_\_\_ DATE \_\_\_\_\_ SHT \_\_\_\_\_ OF \_\_\_\_\_



ITEM REQ'D		BILL OF MATERIALS
1	1	R 1/2" x 11" x 1'-6" W/6-9/16" HOLES A36
2	10	1/2" $\phi$ HILTI KWIK-BOLTS W/2 1/4" MIN EMB.
3	1	T.S. 4" x 4" x 3/8" x 1'-13/8" LG. C.S. A500 GR. B.
4	1	R 3/4" x 8" x 8" C.S. A515 GR. 70
5	2	R 1 1/4" x 3 1/2" x 6" C.S. A515 GR. 70 CUT AS SHOWN
6	1	R 1/4" x 3" x 4" C.S. A515 GR. 70 CUT AS SHOWN
7	1	R 1/2" x 3" x 5" C.S. A515 GR. 70 CUT AS SHOWN
8	1	L 3" x 3" x 3/8" x 1'-0" LG. C.S. A36
9	1	T.S. 2" x 2" x 1/4" x 7 1/2" LG. C.S. A500 GR. B
10	1	R 3/4" x 3" x 3" C.S. A36
11	1	T.S. 2" x 2" x 1/4" x 2'-0" LG. (CUT AS SHOWN) C.S. A500 GR. B. NO. 2/29/84
12	1	R 3/4" x 8" x 8" W/4 9/16" HOLES C.S. A36
13	1	NPS - PUS - 025 DOUBLE NUTTED

FOR INFORMATION ONLY

FOR INFORMATION ONLY

P.P.P. AS BUILT DRAWING

DATE	REV
2/29/84	M.O.

UNLESS OTHERWISE SPECIFIED

REF DWG 500921 SYS 24

CLASS E/E' UNIT II AREA H

ELEV 55' DESIGN -KD

ISO 24-405 DATE 2/29/84

PIPE SUPPORT

DWG No 921-49 REV No 1

SHT 1 OF 3

Check for 1/2" min. not been sized. Holes  
Pipe clearances are 0" bottom  
and 1/16" top and sides and top

PAGE 12 OF 48

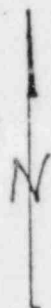




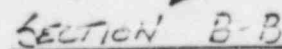




PLAN - PLATE ①



FOR INFORMATION  
ONLY



P.P.P. AS BUILT DRAWING

DATE	R.P.P. VERIFIED
2/29/64	M.O.

UNLESS OTHERWISE SPECIFIED

Other leafhoppers are: C. bellum  
and C. 1.10" the largest and the

PAGE 14 OF 48

REF ID: A50021 SYS 24

class  $\frac{E}{E'}$  unit  $\frac{E}{E'}$  area  $\frac{E}{E'}$

PLAN 55'-0 DESIGN 43

15024-405 DATE 2/23/64

# PIPE SUPPORT

ENG No. 321-42 REF No. 6

SHT 3 CH 2

ADDED ANCHOR PER  
ANALNO. 24-506 C.E.E.D.  
550

REQUIRED  
PRIOR TO WORK

APPROVED  
CONSTRUCT  
10/4/83  
DATE  
ENR  
XG12 10/3/83

SEE Q.F.-29876

SEE DETAIL C

FCV 409

CONTROLLED COPY

PACIFIC GAS & ELECTRIC CO.

APPROVED FOR  
CONSTRUCTION

ENGINEERING DEPARTMENT

DATE SEP 20 1983

BY V.L. Brown

Klumbas 9/14/83

Hilti HD1 1/2"

(G.R.E.C.D.)

W.R.

ENGR.

WNN

100 10/2/83

2'-0"

1'-4"

N

TS. 4x4x3/8x11/2 SYSTEM

FOR INFORMATION ONLY

LOCATION PLAN

CHANGD L'S  
ADDED 1 TO PROVIDE AXIAL RES. 11-3-78

NO FIRING PROCESS  
SHEETS REQUIRED

1 COMPLETE REDRAW 2 CHANGED SIZE

UNLESS OTHERWISE SPECIFIED

Welds: 1/4" fillet all around  
U-bolts: field-fit, nut each side.  
1-16" clearance, spacers per PG&E  
Dwg. 049243 int. 22

T-shoes: per PG&E Dwg. 049243

int. 20

PAGE 15 OF 48

REF. DWG.

500921

SYS.

24

UNIT

AREA

H

CLASS

5

ELEV

DESIGN

KC

ISO

25

DATE

12-2-75

PIPE SUPPORT

DWG. No.

921-49

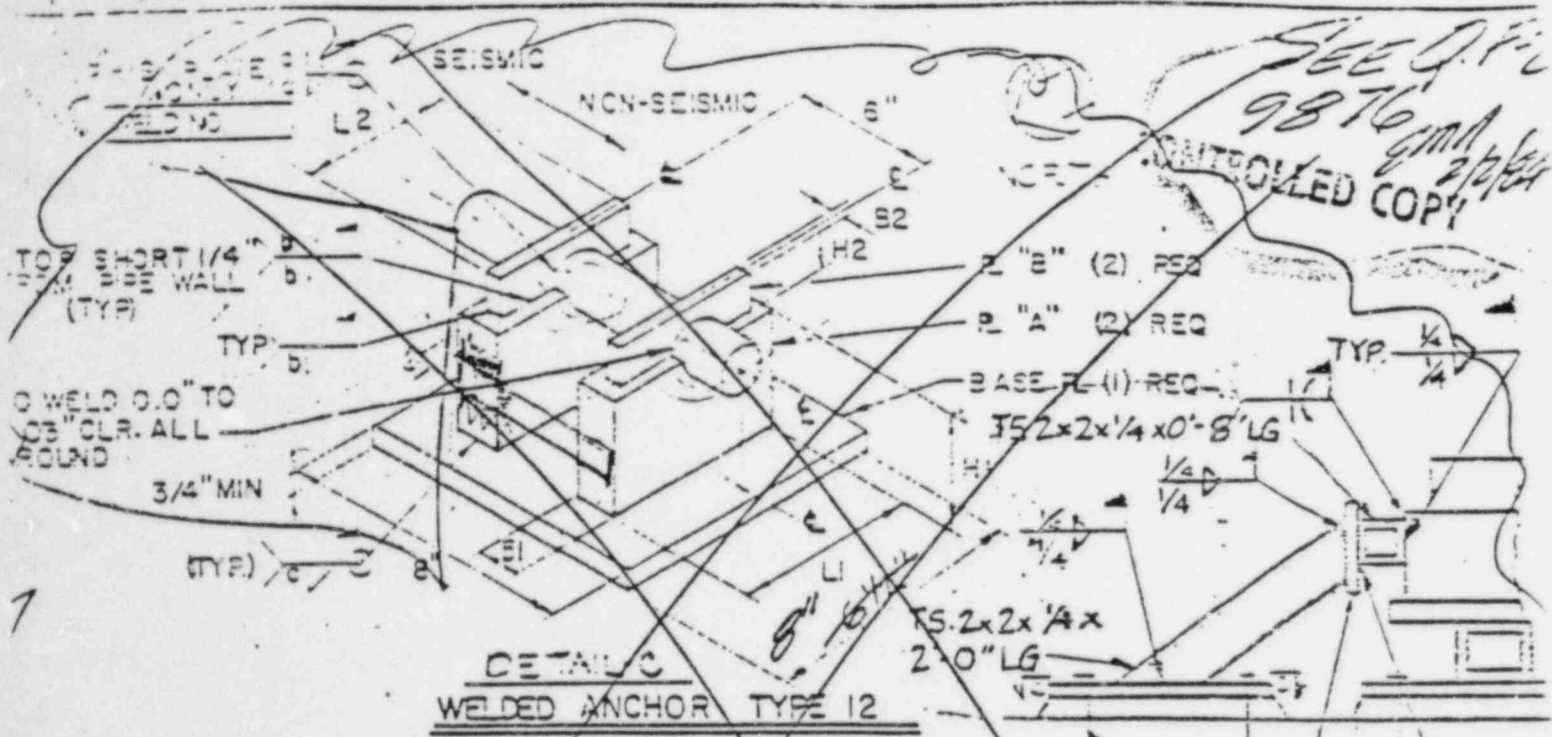
REV No.

6

SHT 1 OF 2

ANCHOR-BOLT

SEP. 1985

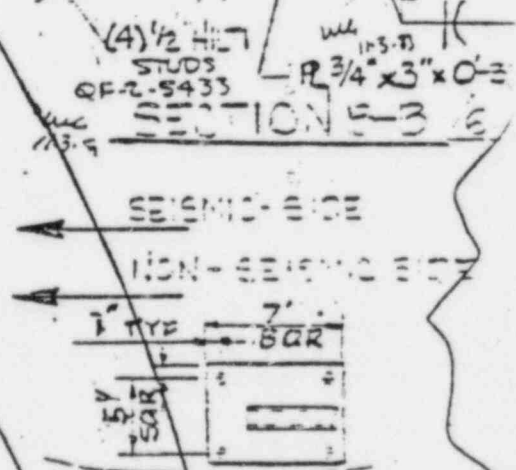


**DETAIL C  
WELDED ANCHOR TYPE 12**

PIPE Ø INCHES (SCH 80)	THK IN	WELD SIZE			PLATE "A"			PLATE "B"		
		Ø	Ø	C	L1	H1	B1	L2	H2	B2
		IN	IN	IN	IN	IN	IN	IN	IN	IN
2" Ø (2.375)	.218"	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1 1/2"
1 1/2" Ø (1.315)	.179"	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1 1/2"
1" Ø (1.315)	.179"	1/4"	3/16"	5/16"	6"	3 1/2"	1 1/4"	4"	3"	1 1/4"
3/4" Ø (1.050)	.154"	1/4"	3/16"	5/16"	5"	3 1/2"	3/4"	4"	3"	1 1/4"

**NOTE:**

1. ANCHOR TO BE USED FOR SCH 80, OR LESS.
2. PLATE MATERIAL FOR CARBON STL PIPE IS STEEL A-515 GR. 65
3. PLATE MATERIAL FOR STAINLESS STL PIPE IS STEEL A-240 TYPE 304
4. ANCHOR TO BE USED ONLY AT CODE BREAKS BETWEEN PG AND E DESIGN CLASS I AND II PIPING
5. ANCHOR DESIGN, TYPE 12 IS BASED ON THE MAX. POSSIBLE LOADS THEREFORE, ALLOWABLE LOADS ARE NOT NECESSARY
6. SUPPORTING STL AND WELD TO THE ANCHOR TO BE QUALIFIED BY THE ENGINEER
7. CUT PLATE "A" TO FIT



APPROVED FOR  
CONSTRUCTION  
DATE 11-3-83  
FOR INFORMATION ONLY

PACIFIC GAS & ELECTRIC CO  
APPROVED FOR  
CONSTRUCTION  
ENGINEERING DEPARTMENT  
DATE 11-3-83

UNLESS OTHERWISE SPECIFIED

REF DWG. 500-21 SYS 24  
CLASS E E UNIT 2 AREA 1  
ELEV 50-77 DESIGN 1  
ISO 24-24 DATE 2-5-83

**PIPE ANCHOR**  
DWG. No. 921-49 REV. No. 6  
ANCHOR SHT 2 OF 2





921/49  
REV 6

QF -2- 9876  
① RFS 2-3-84

INT - 2F4

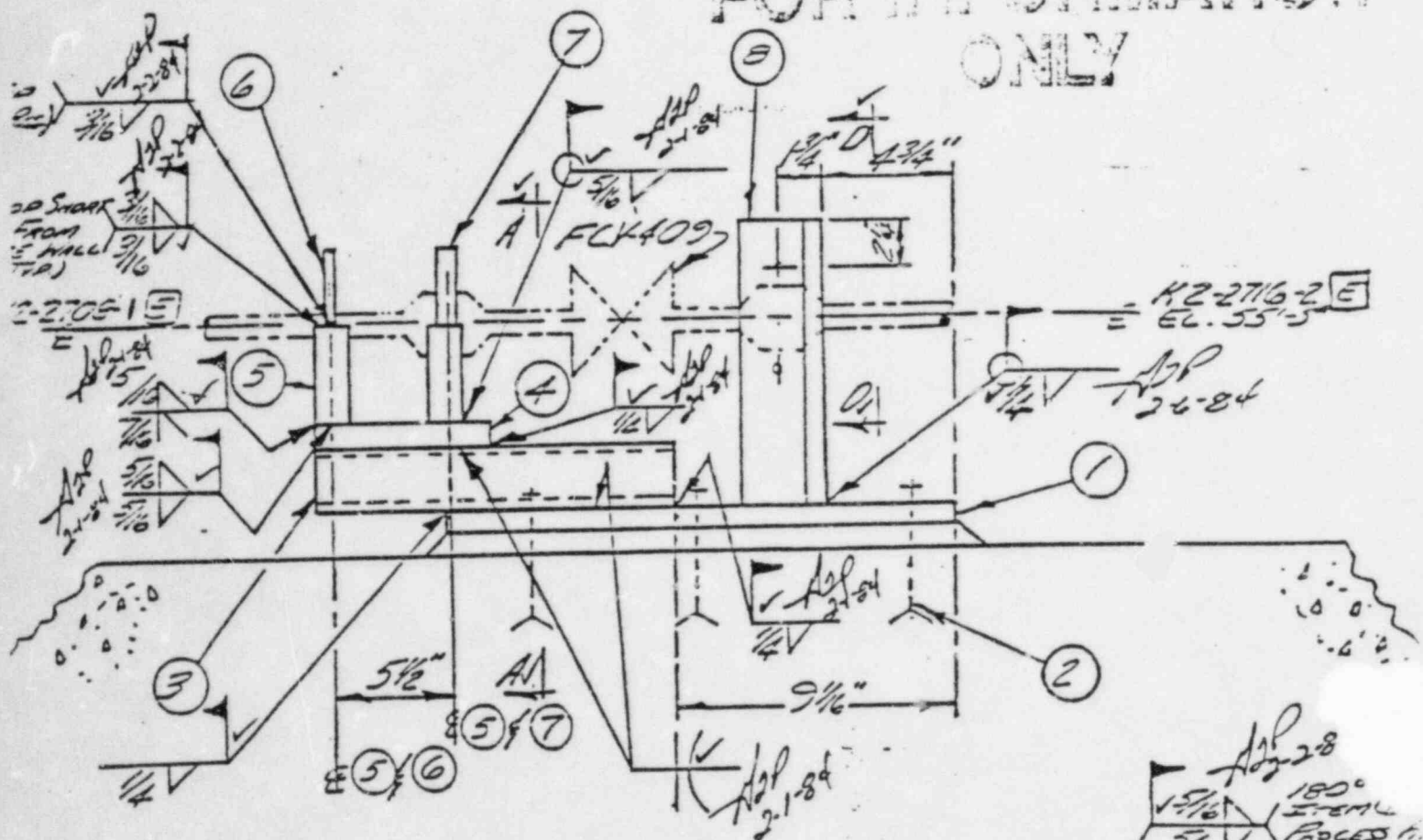
ITEM	REQ.	BILL OF MATERIALS
✓ 1	1	R 1/2" X 11" X 1'-6" LG. W/ (6) 9/16" Ø HOLES C.S. A36
✓ 2	10	1/2" Ø HULTI KWIK BOLT W/ 2 1/4" MIN. EMB.
✓ 3	1	T.S. 4" X 4" X 3/8" X 1'-13 1/2" LG. C.S. A500 GR. B
✓ 4	1	R 3/4" X 8" X 8" C.S. A515 GR. 70
✓ 5	2	R 1 1/4" X 3 1/2" X 6" C.S. A515 GR. 70
✓ 6	1	R 1 1/4" X 3" X 4" C.S. A515 GR. 70
✓ 7	1	R 1/2" X 3" X 5" C.S. A515 GR. 70
✓ 8	1	4 3" X 3" X 3/8" X 1'-0" LG. C.S. A36
✓ 9	1	T.S. 2" X 2" X 1/4" X 7 1/2" LG. C.S. A500 GR. B
✓ 10	1	R 3/4" X 3" X 3" C.S. A36
✓ 11	1	T.S. 2" X 2" X 1/4" X 2'-0" LG. CUT TO SUIT C.S. A500 GR. B
✓ 12	1	R 3/4" X 8" X 8" W/ (4) 9/16" Ø HOLES C.S. A36
✓ 13	1	NPS-PUS-025

FOR INFORMATION  
ONLY

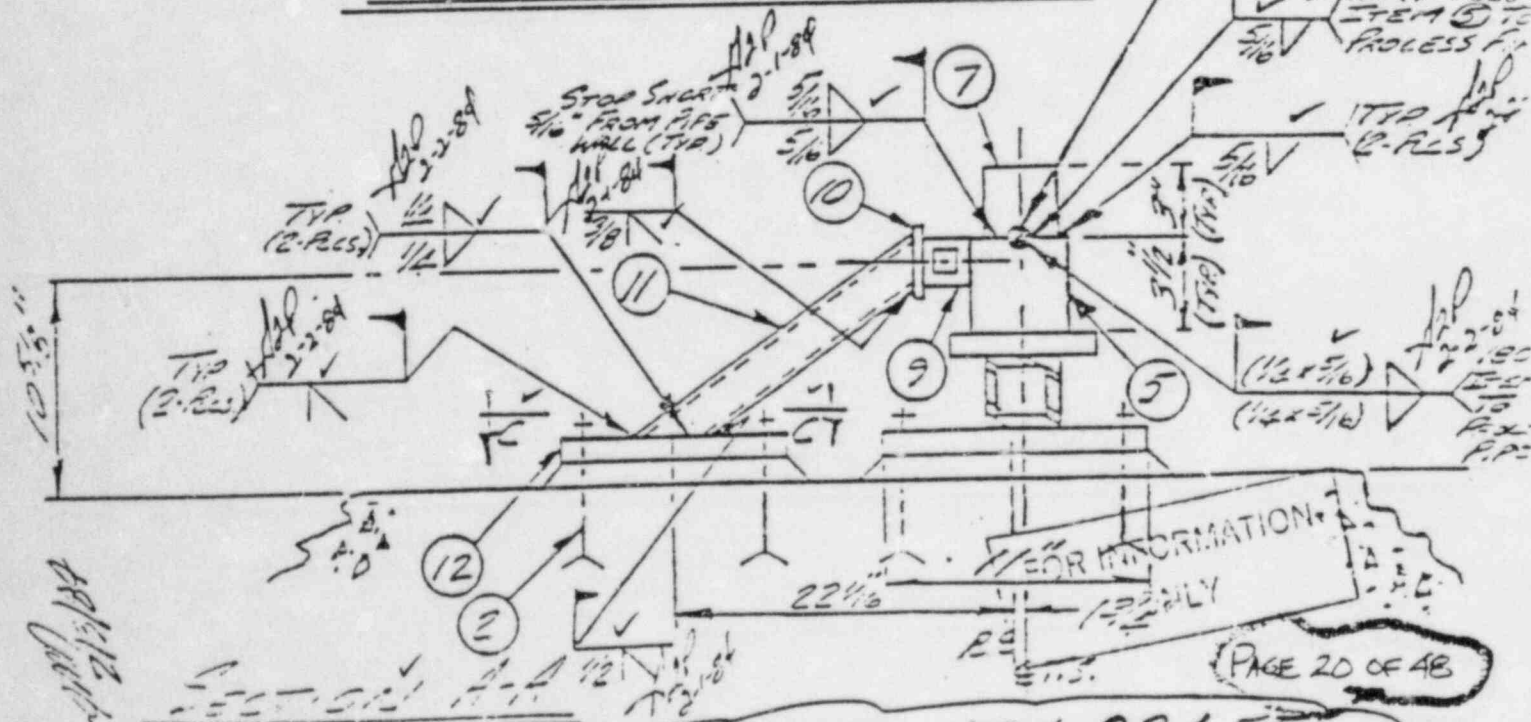
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ONLY

PAGE 19 OF 48

FOR INFORMATION  
ONLY



ELEVATION LOOKING NORTH



ITEM ⑦ PO# 12819 HT# 0345  
ITEM ⑤ PO# 12819 HT# 491 H263

FORM 244A  
ESD 244 REV. DATE 11-4-83

PULLMAN POWER PRODUCTS  
ULTRASONIC THICKNESS REPORT

ISOMETRIC/DRAWING# 24-405 DATE 1-30-84  
FW/LOCATION Coupling DCH/DR# \_\_\_\_\_  
LINE# (If Available) KZ-2708-1E MATERIAL 9S

MEASUREMENT METHOD

☒ METHOD "A"

NORTEC NDT-120 SN

1105

☐ METHOD "B" UT Level I, II,  
III only)

☐ KRAUTKRAMER ☐ SONIC

☐ THIN-THICK CALIBRATION

☐ MAGNAFLUX ☐ OTHER

☐ MULTIPLE ECHO BACK  
REFLECTION CALIBRATION

SERIAL NUMBER \_\_\_\_\_

TRANSDUCER MFG \_\_\_\_\_

FREQ. & SIZE \_\_\_\_\_

REFERENCE BLOCK SERIAL NUMBER

1105-C1

MATERIAL TYPE

9S

THICKNESS

STEP #1

100

STEP #2

1200

STEP #3

1300

NOMINAL WALL THICKNESS

N/A

MINIMUM WALL THICKNESS

N/A

ACTUAL THINNEST WALL  
THICKNESS MEASURED

.225

INITIALS

☐ ACCEPT

☐ REJECT

COMMENTS-THE SKETCH OF REJECTED AREAS NEED TO INCLUDE LENGTH, WIDTH AND DEPTH DIMENSIONS. IF POSSIBLE, INCLUDE REFERENCE TO THE NEAREST WELD OR HANGER MEMBER.

Info. U.T. Performed per request of  
Engineer Joe Newcombe. Area Around  
Gauges in coupling have been U.T. Lowest  
Reading recorded above. Actual depth of gauges is NOT  
Possible to obtain with U.T.

FOR INFORMATION  
ONLY

FOR INFORMATION  
ONLY

Q.C. INSPECTOR SIGNATURE

[Signature]



# REQUEST FOR GROUT OR DRY PACK UNIT II

DRAWING# 500921FLOOR XHANGER# 921-49ELEVATION 55PLATE#    AREA HCEILING    GROUT TYPE    LINE# K2-2708-(E)WALL    BUSHED ☐

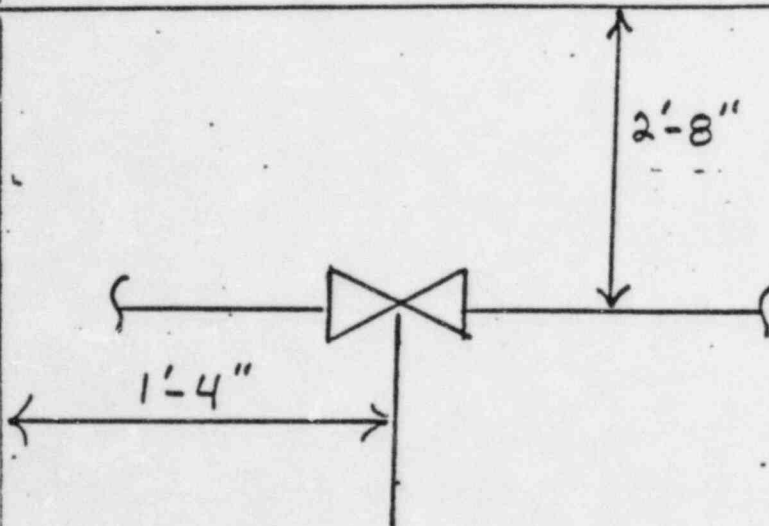
YES

NO

GROUT REMOVAL  
FOR NOT AUDIT X

(K)

(186)



FOR INFORMATION  
ONLY

FOR INFORMATION  
ONLY

FULLMAN CO

AD / Corvick = 1/1688

FULLMAN FOREMAN

N. LENGLE = 1160 EXT 2415

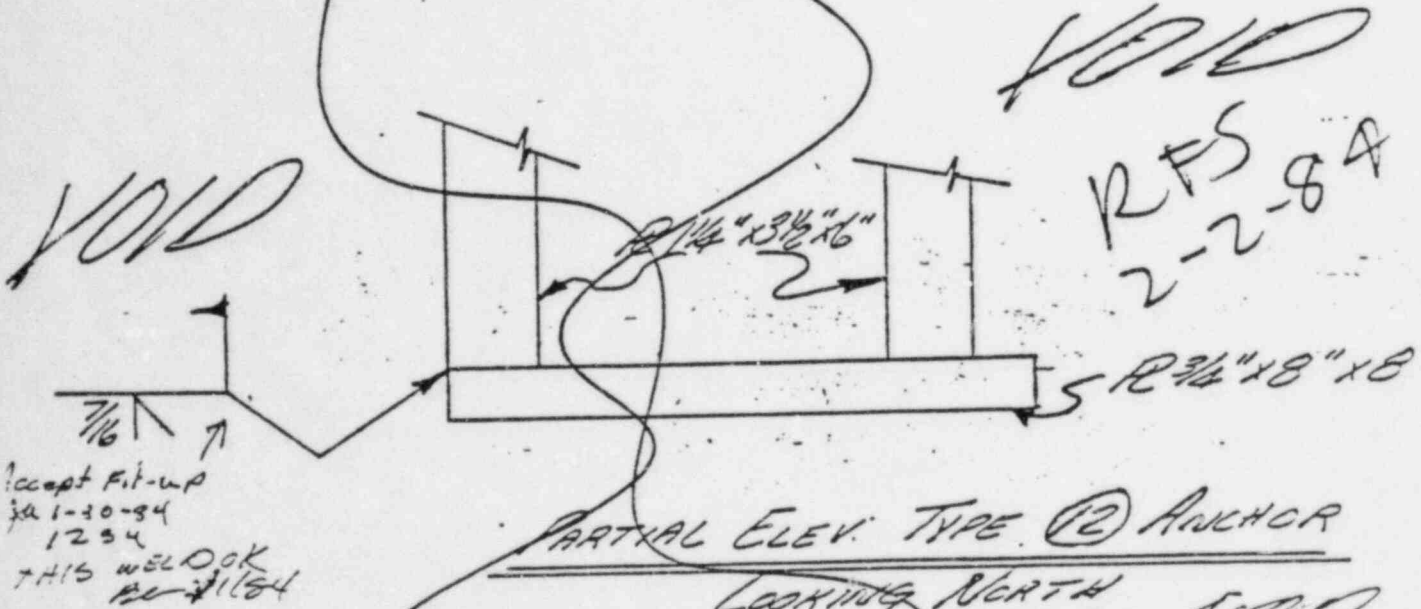
PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SUBJECT 921/49 REV 6 SEQUENCE NUMBER QF-2-9736  
CLASS E

LOCATION AREA 2H ELEV: 55'  
☐ pre-inspect  
☐ past pre-inspect  
☐ during installation  
☐ after installation  
☒ other

*THIS Q.F. VOIDS Q.F.-2-9361 VOID*

PROBLEM: *WELDING CLARIFICATION REQUIRED*  
SOLUTION: *INSTALL AS SHOWN.*



*Accept Fit-up  
JA 1-30-84  
1234  
THIS WELD OK  
RE-#1184*

*PARTIAL ELEV. TYPE (C) ANCHOR*

*LOOKING NORTH*

*P.P.P.F.E. JMD 1/30/84*

DCN NO. \_\_\_\_\_ REV. \_\_\_\_\_ G.C.F.E. \_\_\_\_\_

REFERENCE DRAWING 921/49 SH 2 OF 2

ATTACHMENTS YES NO \_\_\_\_\_ PAGES (INC. THIS SHEET) 1

AREA ENGINEER

CONSTRUCTION MAY PROCEED

**FOR INFORMATION**

CONSTRUCTION D.P. REC'D

FOR INFORMATION ONLY DATE 1-30-84

CONTRACTOR RECEIVED

DATE

ISSUED ENGINEER

DATE

PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SEQUENCE NUMBER QF 2-9361

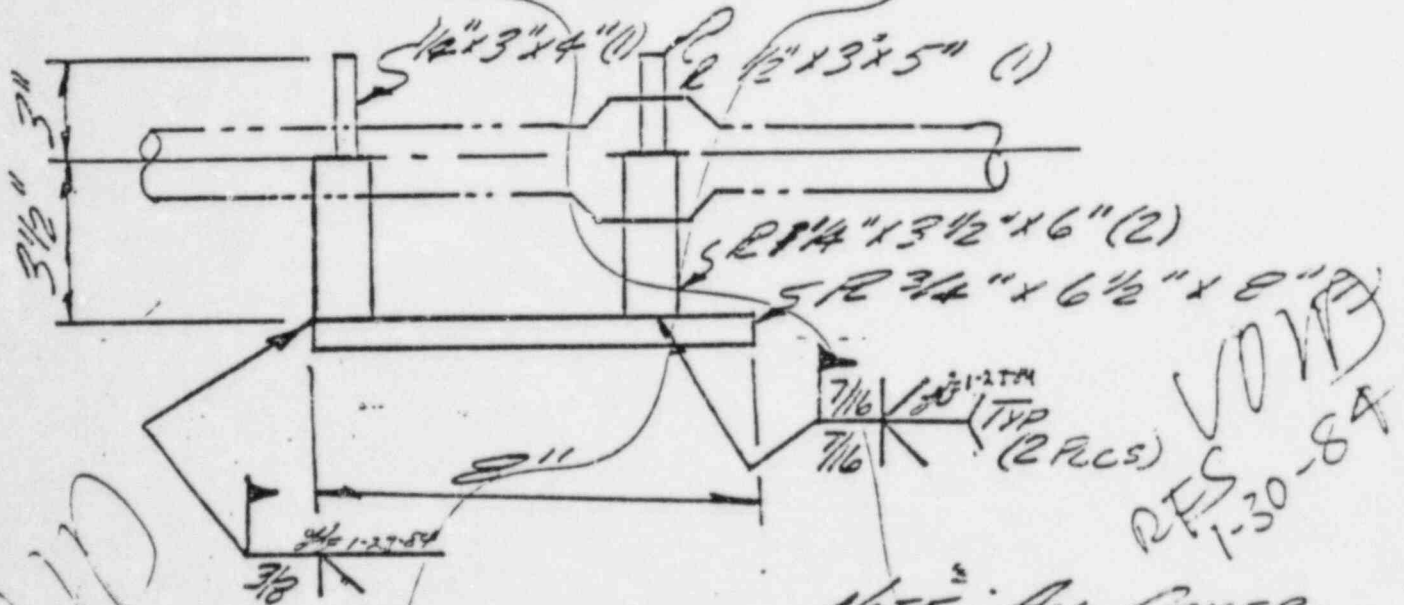
SUBJECT 921/49 REV 6 CLASS E

LOCATION AREA: 2 H ELEV: 55'

PROBLEM: WELDING CLARIFICATION  
REQUIRED

DESCRIPTION: SOLUTION: WELD AS SHOWN

- ☐ pre-inspect  
☐ past pre-inspect  
☐ during installation  
☐ after installation  
☒ other



ANCHOR 12

LOOKING NORTH

NOTE: ALL OTHER  
WELDING ON ANCHOR (12)  
TO BE AS SHOWN IN  
DETAIL C

P.P.P. F.E. 1/23/84

S.C. F.E. MF 23-84

REFERENCE DRAWING 921-49 OF 2 OF 2

ATTACHMENTS X PAGES (INC. THIS SHEET) 1

FOR ENGINEER:

FOR INFORMATION ONLY

FOR INFORMATION ONLY  
DATE 1-23-84

DATE 1/23/84

PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SEQUENCE NUMBER QF-2-5433  
SUBJECT Hwy 921-49 REV 6 CLASS E1  
LOCATION AREA: H ELEV: 55'

- ☒ pre-inspect
- ☐ post pre-inspect
- ☐ during installation
- ☐ after installation
- ☐ other

DESCRIPTION: *Dwg does not indicate what type of 1/2" Hilti to be used.*

*Solution: Use 1/2" Hilti studs (2 1/4" min. embed.)*

*THIS IS ACCEPTABLE*

APPROVED FOR  
CONSTRUCTION

11.2.83 W  
DATE ENGR

FOR INFORMATION  
ONLY

REFERENCE DRAWING 921-49 SH 3

ATTACHMENTS YES

PAGES (INC. THIS SHEET) 1

AREA ENGINEER:

FOR INFORMATION  
ONLY

CONTRACTOR RECEIPT

DATE 11-3-83

PAGE 25 OF 48

DATE 11-3-83

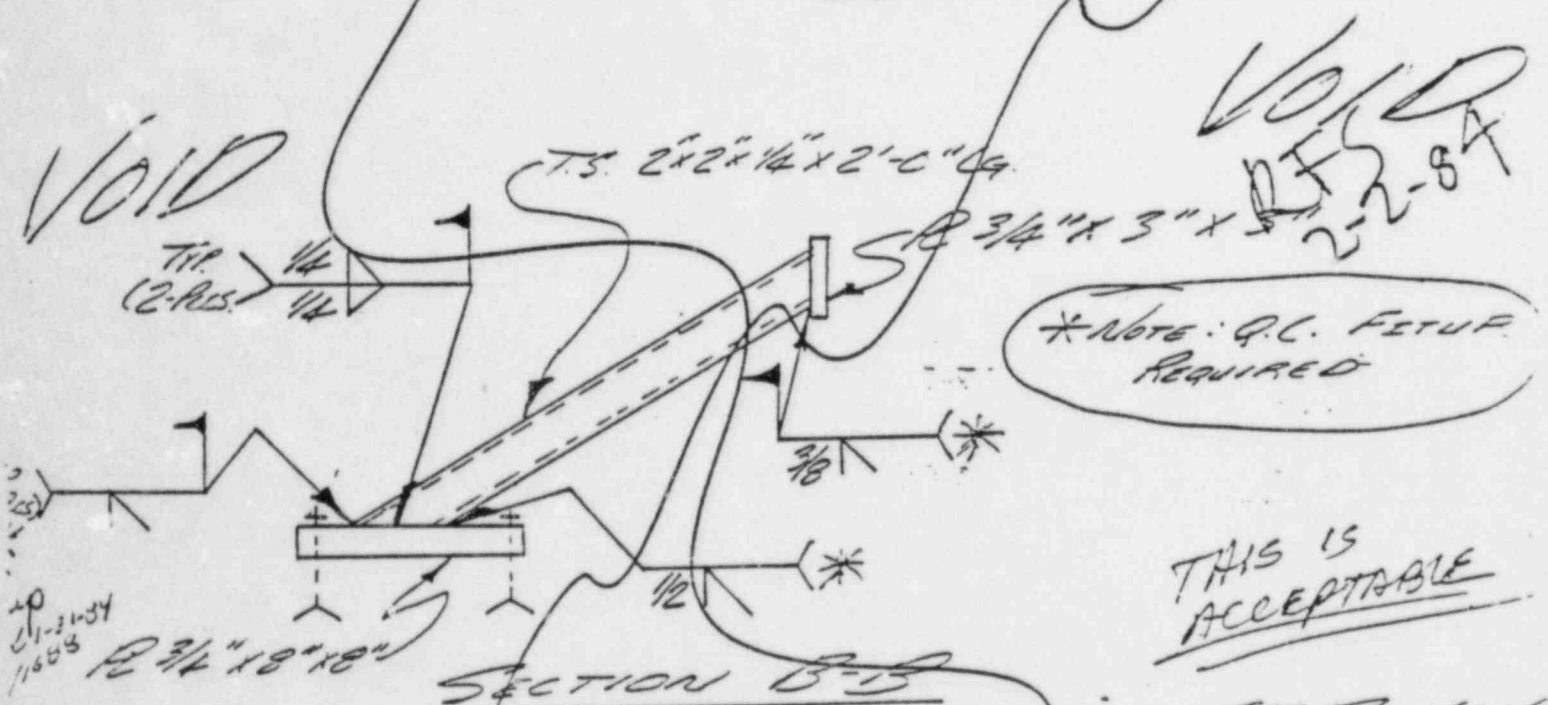


PIPE SUPPORT DESIGN TOLERANCE CLARIFICATION FORM

SUBJECT 921/49 REV 6 SEQUENCE NUMBER DF 2-9761  
CLASS ETE

LOCATION AREA 24 ELEV: 55  
☐ pre-inspect  
☐ post pre-inspect  
☒ during installation  
☐ after installation  
☐ other

PROBLEM: VOID  
SOLUTION: WELDING CLARIFICATION REQUIRED  
INSTALL AS SHOWN.



DCN NO. \_\_\_\_\_ REV VOID P.P.P.E.E. 1/3/84  
G.C.F.E. \_\_\_\_\_

REFERENCE DRAWING 921/49 SH \_\_\_\_\_

ATTACHMENTS XIS

AREA ENGINEER \_\_\_\_\_

CONSTRUCTION MAY PROCEED

**FOR INFORMATION**

CONSTRUCTION D **ONLY**

DATE 1-31-84

CONTRACTOR RECEIPT \_\_\_\_\_

PIPE ENGINEER \_\_\_\_\_

WILCOX OIL FIELD ACCOUNTS  
ACCOUNTING REQUIREMENTS A. 2

ATTN: Craft Foreman

Write the following code on the time sheet in the "Hanger No. or the No. of Hanger Time Sheets or in the "Place No./Well No." section of Hanger Time Sheets when working on the attached work authorization:

921-49-4001
1-62/27-24
PIG 5920-2770

Supplemental or additional work authorizations pertaining to this work authorization that were received in the field require recording. No other data, information or accounting is required in this section of the time sheets.

The following pertains to the Wilcox Accounting Office only:

DOI NO. \_\_\_\_\_

WORK REQUEST NO. \_\_\_\_\_

DRAWING NO. P/S

DATE ISSUED 10-3-83

FOR INFORMATION  
ONLY

FOR INFORMATION  
ONLY

GENERAL WORK REQUEST  
ACCOUNTING REQUIREMENTS 2.2

NOTE: Check Foreman

Write the following code on the time sheet in the "Manager No." or "Job No." or "Project No." or in the "Place No./Well No." section of the time sheets when working on the attached work authorization:

921-49-4001
1-62/27-24
PIC 5920-2770

Supplemental or additional work authorizations pertaining to this work authorization that were received in the field require recording. No other detail, information or accounting is required in this section of the time sheets.

The following pertains to the Pullman Accounting Office only:

DCT NO. \_\_\_\_\_

WORK REQUEST NO. \_\_\_\_\_

DRAWING NO. P/S

DATE ISSUED 10-3-83

FOR INFORMATION  
ONLY

FOR INFORMATION  
ONLY

PAGE 28 OF 48

REQUEST FOR AUTHORIZATION  
TO ADD HANGERS TO EXHIBITION 125

ACCOUNTING CODE: 4001, 4002, 4004, IDI, OTHER (SPECIFY) \_\_\_\_\_

~~CONTROLLED COPY~~

HOT!  
ASAP

PPP DATE:

ONLY

PGZ DATE



# Pullman Power Products

HANGER NO. 921/49 REV 6

AREA/ELE. 2A/55

## HANGER PRE-INSPECTION CHECK LIST

ITEMS TO BE CHECKED	REFERENCES	PREINSPECT CHECKLIST
	ESD 223 AND OTHERS	
1. Can hanger be installed at the proper location	6.2	
2. Is the adjacent anchor spacing acceptable	6.4.1	
3. Can all items be installed and all welds made		
4. Are all welding symbols accurate and complete	6.8	
5. Is old work as-built, acceptable, or to be reworked	SEE MEMO 4-1-53	
6. Initiate DR No. 4678/4730 & dispositioned (as approd)		
7. Is pre-heat on structural steel red & noted on process sheet	6.9.2.2	
8. Are all O.C. Hold Points noted on the process sheet	ESD-284	
9. Have all the necessary forms been originated (to be attached)	101, Inst. C-8	
10. Have all the interferences been resolved		
11. Pre-inspect package complete (read, checklists attached)		

PRE INSPECTED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**FOR INFORMATION ONLY**  
HANGER FINAL INSPECTION CHECKLIST

ITEMS TO BE CHECKED	REFERENCES	PREINSPECT CHECKLIST
	ESD 223 AND OTHERS	
1. Hanger location within ESD-223 tolerances	6.2	<i>OK</i>
2. Adjacent anchor spacing acceptable	6.4.1	<i>OK</i>
3. Threaded connections secure/encasement adequate		<i>OK</i>
4. All items in B.O.M. installed and are correct type	6.6	<i>OK</i>
5. Configuration as per design drawing		<i>OK</i>
6. All welds complete and acceptable (size, configuration)	6.8	<i>OK</i>
7. Configuration free from ARC strikes, weld splatter, etc.	6.9.2.1	<i>OK</i>
8. Pipe and/or guide clearances acceptable	6.7	<i>OK</i>
9. Base plates, fish plates & stiffeners installed per ESD-223	6.3.7 & 6.2	<i>OK</i>
10. Hanger properly identified. Number written on support		<i>OK</i>
11. Attachments to other supports identified		<i>OK</i>
12. Specials, rod supports, T-shoes, U-bolts properly installed	6.5, 6.4.2	<i>OK</i>
13. Spring tan installed and cold loss set per drawing	6.4.3	<i>OK</i>
14. Guy struts correct size installed re-attach, check list		<i>OK</i>
15. Pin-to-pin within tolerance	6.3.2.1	<i>OK</i>
16. Shock supports: mechanical shock T.O. plate complete		<i>OK</i>
17. rod & cold section within tolerance	6.3.2.2	<i>OK</i>
18. pin-to-pin within tolerance	6.3.2.1	<i>OK</i>
19. alignment acceptable (plate & support)	6.3.2.1	<i>OK</i>
20. all hardware complete		<i>OK</i>
21. Package reviewed for completeness (attach check sheet, etc.)		<i>OK</i>

COMMENTS: SEE G.F.-2-9876

DESIGNED BY: 2275 596  
 INSPECTED BY: [Signature] 11/1/54  
 (PAGE 30 OF 48)

HANGER # <u>921-49</u>	
LATEST QC ACCEPT DATE <u>3/15/84</u>	
DWG/DC# _____	REV# _____
AT QA (PG&E REJECT) <input type="checkbox"/> YES / <input type="checkbox"/> NO	
A/B SUBMITTED TO PG&E DATE <u>6-14-79</u> <sup>As approved</sup>	
INFO SUPPLIED BY: <u>Sal 4/4/84</u> <u>W. Jackson</u>	

CONTROLLED COPY

FOR INFORMATION  
ONLY

ACCOUNTING REQUIREMENTS A.2

ATTN: Craft Foreman

Write the following code on the time sheet in the "Hanger No. or ID No." of Hanger Time Sheets or in the "Place No./Weld No." section of Repair Time Sheets when working on the attached work authorization:

921-49-4001

1-62/27-24

PIC 5920-2770

CONTROLLED COPY

Supplemental or additional work authorizations pertaining to this work authorization that were received in the field require recording. No other detail, information or accounting is required in this section of the time sheets.

The following pertain to the Pullman Accounting Office only:

DCI NO. \_\_\_\_\_

WORK REQUEST NO. \_\_\_\_\_

DRAWING NO. P/S

DATE ISSUED 10-3-83

FOR INFORMATION  
ONLY

## AS/BUILT REVIEW CHECKLIST

REV 6 LINE

ITEM	#	SUBJECT	ESD 223 REF. SECT.	N G	COMMENT
	1	Do components & dimensions comply with material list.	N/A	<input checked="" type="checkbox"/>	
	2	Are all changes outside of ESD tolerances properly noted on coversheet justified by D.R., T.C. and old work.	N/A	<input checked="" type="checkbox"/>	
	3	Are all pages of As/Built dwg. stamped, signed & dated.	N/A	<input checked="" type="checkbox"/>	
	4	Is support material/material substitution within ESD tolerances.	6.2	<input checked="" type="checkbox"/>	
SUPPORT LOCATION	5	Is support location within tolerances.	6.2	<input checked="" type="checkbox"/>	
	6	Is support location to a known feature of pipe As/Built to within $\pm 1"$ .	6.2	<input checked="" type="checkbox"/>	
BASE PLATE/ BASE PLATE STIFFENER	6	Is plate thickness within tolerance ( $\pm 1/4"$ or minus 0") and is nominal plate thickness noted on As/Built drawing.	6.3.1	<input checked="" type="checkbox"/>	
	7	Is plate length & width within tolerance ( $\pm 1/4"$ ). As/Built to within ( $\pm 1/8"$ ).	6.3.2	<input checked="" type="checkbox"/>	
	8	Are base plate holes located within tolerance ( $\pm 1/4"$ ). As/Built to within ( $1/8"$ ).	6.3.4	<input checked="" type="checkbox"/>	
	9	Is the actual edge distance within AISC min. requirements.	6.3.4	<input checked="" type="checkbox"/>	
	10	Are offset dimensions & attachment to center line base plate within tolerance ( $\pm$ one plate thickness max) and offsets larger than $1/4"$ shown on As/Built drawing.	6.5.1	N/A	
FISH PLATES	7	Are the new fish plates shown on As/Built drawing.	6.3.6	<input checked="" type="checkbox"/>	
	8	Are the existing fish plates shown and all discrepant conditions noted on As/Built drawing.	N/A	<input checked="" type="checkbox"/>	

FOR INFORMATION  
ONLY



## AS/BUILT REVIEW CHECKLIST

ITEM	#	SUBJECT	ESD 223 REF. SECT.	E N G	COMMENT
ANCHOR BOLTS	8	Is anchor bolt size, manufacture & type shown on the As/ Built drawing.	6.4		
	•	Does the minimum embedment for anchor bolts meet design minimum requirements.	6.4		
	•	Is the axis of the anchor bolt & the perpendicular to the concrete surface within 5° maximum tolerance and the mis- alignment larger than 5° shown on As/Built drawing.	6.4		
	•	Are the washers for the new expansion anchors shown on the As/Built drawing.	6.4.1.2		
	•	Does the As/Built drawing show all adjacent anchors to within 5 to 10 hole diameters drilled in concrete.	6.4.1.4		
	•	Are all dimensions edge of concrete openings to center of concrete anchor within tolerance (5 times the diameter of the hole drilled but never less than 3").	6.4.1.3		
MEMBER LENGTHS	9	Are all members used in construction frames (i.e. struc- tural steel shapes, plates & bars used to box such mem- bers) within +3" or -12" tolerance and As/Built to ± 1".	6.6.2.2		
	•	Are all other members not included in 9 within ± 1/4" tolerance and As/Built to nearest 1/4".	6.6.2.2		
SHIM PLATES	10	Are all shim plates which are thicker than 1/2" welded at min. 2 opposite sides & As-Built with fillet weld size per AISC min. and min. length of 4 times the size of fillet.	6.6.2.6		
COVER PLATES/ KEEP HOLES	11	Are all the oversized cover plates within tolerance (1" max. larger size than the width of capped section).	6.6.2.12		
	•	Are all the additional cap plates (not required by design) welded at 2 opposite sides & As-Built with a 3/4" lg. (min) fillet weld and size per AISC min.	6.6.2.14		
	•	Are all existing & new cap plates detailed on the As/Built drawing.	6.6.2.14		
	•	Are all vent holes (not required by design) shown on As/ Built drawing.			
GAPS	12	Are all the As/Built gaps within ESD tolerances.	6.7		

FOR INFORMATION ONLY

## AS/BUILT REVIEW CHECKLIST

ITEM	#	SUBJECT	ISC 223 REQ. SECT.	N	COMMENT
WELDS	13	Does the As/Built size of new welds meet design.	6.8.2.3		
		• Do all existing undersized fillet welds meet minimum AISC weld requirements.	6.8.2.3		
		• Are all existing additional welds not required by design or exist. incomplete welds shown on the As/Built drawing.	6.8.2.3		N/A
		• Are all new welds which are inaccessible for more than 10% of the design weld length justified by a tolerance clarification.	6.8.2.3		N/A
		• Are all new inaccessible welds (including those that are inaccessible for less than 10% of the design weld length located and dimensioned on the As/Built drawing.	6.8.2.3		N/A
		• Are all fillet fit-up gaps shown on the As/Built drawing.	N/A		
		• Are all existing fillet welds with dihedral angle equal or smaller than 30° or equal or larger than 150° noted as (seal weld) on the As/Built drawing.	6.8.2.3		N/A
		• Is the weld symbol for all new welds with dihedral angle equal or smaller than 30° or equal or larger than 150° As/Built to show full or partial penetration weld as per ESD 223 recommendations.	6.8.2.3		
		• Does the As/Built drawing show actual weld lengths attach (13) for all existing welds at tube steel posts with ends not returned.	6.8.2.3		

FOR INFORMATION  
ONLY



UNIT 1 & 11  
AS/BUILT REVIEW CHECKLIST

HANGER \_\_\_\_\_ SYSTEM \_\_\_\_\_  
REV \_\_\_\_\_ LINE \_\_\_\_\_

ITEM	#	SUBJECT	ESD 223 REF. SECT.	E N G	COMMENT
SWAY STRUTS	15	Does the As/Built drawing indicate vent hole size (tolerance 1/8" dim. to 1/4" dim. max) for all SRF struts.	6.15.1.3		
		Is the pin to pin dimension for sway struts within tolerance. (+12 -1 for design P-P 25" or +12 -3 all other design P-P).	6.6.2.2		N/A
		Is the pin to pin dimension As-Built to within $\pm 1"$ .	6.6.2.2		
		Is the field drilled sight hole shown pictorially on As/Built drawing for all SRS struts.	6.15.1.5		
		Does the As/Built drawing show the size and field weld symbol for all strut couplings and end assemblies.			
		Are all angular tolerances on the strut As-Built to within $\pm 2^\circ$ .	6.15.2.3		
		Is the minimum and maximum pin to pin for SRS & SRF struts as per tables of ESD 223 Sect. 6.15.1.2.			
ROD HANGERS	16	Is rod swing angle within tolerance (4° max.) and As/Built to within $\pm 2^\circ$ .	6.17.1		
SPRING HANGERS	17	Is the As/Built cold setting within 5% of design setting	6.13		
		Is the spring swing angle within 4° max. tolerance and As/Built to within $\pm 2^\circ$ .	6.14		

FOR INFORMATION  
ONLY



VERIFICATION POINTS		GENERAL FIELD SUPPORT PROCESS SHEET		DATE	
1. LOCATION OF SUPPORT COMPLIES WITH DRAWING.		1712		✓ 4/1/84	
2. DRAWING CHANGES NOTED AND COMPONENTS COMPLY WITH MATERIAL LIST				✓	
3. ANCHORS INSTALLED AND WITNESSED BY G.C.		A. Holes drilled to tolerance and Check adjacent anchors		✓	
B. Shield/Plug Driven to Tolerance		TYPE: Hilti/Phillips		✓	
C. Type Stud Installed		SIZE	MIN. EMB.	TYPE: Hilti/Phillips	
D. Anchors Torqued		SIZE	VALUE	WRENCH SERIAL NUMBER	
E. Unused holes dry packed				1712 (X) 4/1/84	
4. BACK OFF BOLTS PRIOR TO WELDING ON BASE PLATES				(X) 4/1/84	
5. FIT-UPS: A. Pipe attachments installation:		(1) Heat No:		✓	
		(2) P.O. No:		✓	
B. Support Members:		ITEMS	SPECIAL INSTRUCTIONS		
(1) Groove & Full Pen Welds			✓		
C. Purge Established where required				✓	
6. WELD PREP ZONES CLEAN OF PAINT, OIL				✓	
7. WELDING OF PIPE ATTACHMENTS (PER SEPARATE PROCESS SHEET) F.V.#				X	
8. WELDING OF HANGER SUPPORT MEMBERS ONLY:		IDENTIFICATION	WELD CODE		
SPECIAL WELDING INSTRUCTIONS:			CS/CS 5942/1712 4/1/84		
			↓ 88/89		
			SS/SS 129		
			↓ 17/16		
			CS/CS		
9. OTHER INSTRUCTIONS OF G.C. REFERRED TO 1712					
10. FINAL WELD CONDITION-SUPPORT MEMBERS:		A. Weld Surface Clean		✓	
		B. Arc Strikes Removed/Minimized		✓	
		C. Weld Size Complies with drawing		✓	
11. REVIEW FOR GENERAL WORKMANSHIP AND CONFIGURATION:		FORWARD		DATE	
A. Components and Dimensions Comply w/Dwg. & Mat'l. List		✓		4/1/84	
B. Pipe Clearance in Accordance with Drawing		✓		4/1/84	
C. Riser Clamp Bears upon Lug		✓		4/1/84	
D. Hanger is Level and Plumb		✓		4/1/84	
E. All Bolts/Nuts Installed and Tight		✓		4/1/84	
F. Wall & Tacking Plates Shipped where Necessary		✓		4/1/84	
G. Joint Request Submitted		✓		4/1/84	
H. Lug Clearance within Tolerance		✓		4/1/84	
12. INTEREST:		A. Installed per Separate Process Sheet		✓	
		B. Drunell Fig. & Size	C. PSA Size	D. TYPE	E. BY
13. SUPPORT ACCEPTED BY G.C. (Complete Installation Review) G.C. SIGNATURE					

1712  
FOR REINSTALLATION  
OF ITEM 8  
REF. D.F.-2-9876  
4/1/84

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DEFECTS	REMARKS
1. ALL WELDERS INSTALLED	
2. WELDS: Inaccessible and/or Undersized	
3. GAUGE: U-Bolts, Tee Shoes and Lugs	
4. GROUTED PLATES: Grout damaged or Holes in Plate	
5. SHIMS: Tack Welds	
6. NUTS NOT FULLY ENGAGED	
7. ARC STRIKES	
8. MATERIAL SIZE	
9. OVERSIZED HOLES IN PLATE: Washers	
10. WARPED BASE PLATES/WELDERS	

PREDISPECTION RESULTS:

I HAVE VERIFIED ALL BELTS BACKWARDS BASE TO 12" x 13" K<sup>4</sup> 10/9 = 1/12  
 The current 2000 feature is at ~~12" x 13" K<sup>4</sup>~~  
 CONTROL VALVE TO THE WEST OF HGR 5" C-C PH 7/11/94

FINAL INSPECTION COMMENTS: \_\_\_\_\_

INSPECTOR \_\_\_\_\_ DATE \_\_\_\_\_

FOR THE DIRECTOR'S USE ONLY

PAGE 39 OF 48

1. LOCATION OF SUPPORT MEMBER AND BEARING				✓	NA
2. BEARING MEMBER TYPE AND DIMENSIONS (SEE THE MATERIAL SPEC)				✓	NA
3. JOINTS EXAMINED AND APPROVED BY P.O.				✓	NA
4. JOINTS EXAMINED TO TOLERANCE AND CHECK JOINTS JOINTS				✓	NA
5. SHEAR/PLATE BOLTS TO TOLERANCE				✓	NA
6. TYPE BOLT INSTALLED				✓	NA
7. TYPE BOLT INSTALLED				✓	NA
8. TYPE BOLT INSTALLED				✓	NA
9. TYPE BOLT INSTALLED				✓	NA
10. TYPE BOLT INSTALLED				✓	NA
11. TYPE BOLT INSTALLED				✓	NA
12. TYPE BOLT INSTALLED				✓	NA
13. TYPE BOLT INSTALLED				✓	NA
14. TYPE BOLT INSTALLED				✓	NA
15. TYPE BOLT INSTALLED				✓	NA
16. TYPE BOLT INSTALLED				✓	NA
17. TYPE BOLT INSTALLED				✓	NA
18. TYPE BOLT INSTALLED				✓	NA
19. TYPE BOLT INSTALLED				✓	NA
20. TYPE BOLT INSTALLED				✓	NA
21. TYPE BOLT INSTALLED				✓	NA
22. TYPE BOLT INSTALLED				✓	NA
23. TYPE BOLT INSTALLED				✓	NA
24. TYPE BOLT INSTALLED				✓	NA
25. TYPE BOLT INSTALLED				✓	NA
26. TYPE BOLT INSTALLED				✓	NA
27. TYPE BOLT INSTALLED				✓	NA
28. TYPE BOLT INSTALLED				✓	NA
29. TYPE BOLT INSTALLED				✓	NA
30. TYPE BOLT INSTALLED				✓	NA
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32. TYPE BOLT INSTALLED				✓	NA
33. TYPE BOLT INSTALLED				✓	NA
34. TYPE BOLT INSTALLED				✓	NA
35. TYPE BOLT INSTALLED				✓	NA
36. TYPE BOLT INSTALLED				✓	NA
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38. TYPE BOLT INSTALLED				✓	NA
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49. TYPE BOLT INSTALLED				✓	NA
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52. TYPE BOLT INSTALLED				✓	NA
53. TYPE BOLT INSTALLED				✓	NA
54. TYPE BOLT INSTALLED				✓	NA
55. TYPE BOLT INSTALLED				✓	NA
56. TYPE BOLT INSTALLED				✓	NA
57. TYPE BOLT INSTALLED				✓	NA
58. TYPE BOLT INSTALLED				✓	NA
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62. TYPE BOLT INSTALLED				✓	NA
63. TYPE BOLT INSTALLED				✓	NA
64. TYPE BOLT INSTALLED				✓	NA
65. TYPE BOLT INSTALLED				✓	NA
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71. TYPE BOLT INSTALLED				✓	NA
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77. TYPE BOLT INSTALLED				✓	NA
78. TYPE BOLT INSTALLED				✓	NA
79. TYPE BOLT INSTALLED				✓	NA
80. TYPE BOLT INSTALLED				✓	NA
81. TYPE BOLT INSTALLED				✓	NA
82. TYPE BOLT INSTALLED				✓	NA
83. TYPE BOLT INSTALLED				✓	NA
84. TYPE BOLT INSTALLED				✓	NA
85. TYPE BOLT INSTALLED				✓	NA
86. TYPE BOLT INSTALLED				✓	NA
87. TYPE BOLT INSTALLED				✓	NA
88. TYPE BOLT INSTALLED				✓	NA
89. TYPE BOLT INSTALLED				✓	NA
90. TYPE BOLT INSTALLED				✓	NA
91. TYPE BOLT INSTALLED				✓	NA
92. TYPE BOLT INSTALLED				✓	NA
93. TYPE BOLT INSTALLED				✓	NA
94. TYPE BOLT INSTALLED				✓	NA
95. TYPE BOLT INSTALLED				✓	NA
96. TYPE BOLT INSTALLED				✓	NA
97. TYPE BOLT INSTALLED				✓	NA
98. TYPE BOLT INSTALLED				✓	NA
99. TYPE BOLT INSTALLED				✓	NA
100. TYPE BOLT INSTALLED				✓	NA

1. ALL WELDS DETAIL

2. WELD: DISCREPANCY AND/OR TOLERANCE

3. WELD: T-BOILER, Tee Joints and Joints

4. GROUTED PLATES: Grout damaged or Holes in Plate

5. WELD: Tack Welds

6. WELD NOT FULLY ENGAGED

7. ARC STARTS

8. WELDING SIZE

9. OVERLAP WELDS IN PLATE: WELDERS

10. WELD BASE PLATE/WEBS

DEFECTS DETAIL:

FINAL DEFECTS SUMMARY:

DEFECTS

DATE

Done & at (1) 5" x 10" x 1" long South East corner of item 12 R-X-2000  
SG VERIFIED TORQUING ON (6) 1/2 x 5/8" Nilti Kwik AT 45+4LR AND END PPP



1. LOCATION OF SUPPORT MEMBERS WITH DRAWING.		2536	✓
2. DRAWING SHOWN WITH AND DISCREPANCIES WITH THE MATERIAL LIST			✓
(3) 1. H.F.B. DISCREPANCIES DETAIL AND WITNESSED BY S.O.		928	✓
B. Shield/Plug Driven to Tolerance	TYPE: MILITARY PHILLIPS	NA	✓
C. Type Stud Installed	SIZE: 1/2" 2 1/4"	928	✓
D. Anchors Torqued	SIZE: VALVE: WRENCH SERIAL NUMBER	3557	✓
E. Drilled holes dry packed		✓	NA
4. BOLT OFF BOLTS PRIOR TO WELDING ON BASE PLATE		3536	✓
5. FIT-UPS: A. Pipe attachment installation:			
(1) Heat No:			✓
(2) P.O. No:			✓
B. Support Members:			
(1) Groove & Full Pen Welds		3557	✓
C. Parts Established where required			✓
6. WELD FREE FROM CLEAN OF PAINT, OIL			✓
7. WELDING OF PIPE ATTACHMENTS (PER SEPARATE PROCESS SHEET) P.V.1.			✓
8. WELDING OF HANGER SUPPORT MEMBERS ONLY:			
SPECIAL WELDING INSTRUCTIONS:			
9. TIGER BRAND OR RE-SETTING OF SOUTH-WEST ALYHR		928	✓
S.W. anchors cut flush & standard new anchors installed & set in place		928	✓
P.C. TO VERIFY 9/16" HANGERS IN 6 ARE BASE PLATE		928	✓
10. FINAL WELD ORIENTATION-SUPPORT MEMBERS:			
A. Weld Surface Clean			✓
B. Arc Surfaces Removed/Minimized			✓
C. Weld Size Complies with drawing			✓
11. REVIEW FOR GENERAL WORKMANSHIP AND CONFIGURATION:			
A. Components and dimensions comply w/dwg. & spec. list			✓
B. Pipe clearance in accordance with drawing			✓
C. Hanger clamp bears upon bar			✓
D. Hanger is level and plumb			✓
E. All bolts/nuts installed and tight			✓
F. Wall & ceiling plates drained where necessary			✓
G. Spout Request Submitted			✓
H. Gap clearance within tolerance			✓
12. INTERVIEW: A. Installing per separate process sheet			✓
B. Trenching P.V. & Size			✓
C. P.V. Size			✓
D. Type of P.V. (P.V. 1)			✓
13. SUPPORT ACCEPTED BY S.O. COMPLETE INSTALLATION REVIEW S.O. SIGNATURE			✓

**INSPECTION REPORT**

1. ALL ITEMS LISTED
2. ITEM: UNIDENTIFIED
3. DATE: 1-31-83 See Notes and Log
4. ITEM PLACES: GROUP ADJACENT TO BOLT IN PLACE
5. ITEM: [illegible]
6. ITEM: [illegible]
7. ITEM: [illegible]
8. ITEM: [illegible]
9. ITEM: [illegible]
10. ITEM: [illegible]

DR 10-31-83  
DR 10-31-83  
DR 10-31-83  
DR 10-31-83  
W/R  
W/R  
DR 10-31-83  
DR 10-31-83  
W/R  
DR 10-31-83

**INSPECTION NOTES:**

INSTALLING [illegible]  
REMOVE VALVE AND TUBING BEFORE  
DR 10-31-83

ORANGE (W) K&P 5/8" LONG 1-31-83  
DID NOT SET  
OK, REQUEST INFO U.T. STM 1/31/84  
SET (W) K&P 5/8" LONG BY K&P 1-31-84  
5 BAGS OFF BOLTS.

(UT OF GUNING REMOVAL)  
AREA BY L. DAVIS II  
SEE ATTACHED SKETCH  
DR 11-31-84

**FINAL REPORT NOTES:**

OLD WORK HKS, SOUTH WEST LOCATION, K&P, REQUIRES  
RE-SETTING OR REMOVAL OF ANCHOR AS DETERMINED BY ENGINEERING  
OTHER ANCHORS MAY BE OUT OF ANGULAR TOLERANCE - ADVISED TO  
CONSULT W/ AREA BOSTON INSPECTOR 1/25/84

(6) Embedment bolts were UT EXAMINED for Length. All were  
5 1/2" x 1/2" EXCEPT THE NORTHWEST CORNER BOLT WHICH WAS  
4 3/4" x 1/2"  
OUT OF (6)

FROM SET (4) 5 1/2" LONG FOR MINIMUM CG. REPT FINE END OF THE (6)  
NORTH-WEST BOLT ONE IS REPT & ONE WAS 1" CUT WEE  
1-20-84

1 1/2" W. HKS cut flush and abandoned (1) S.W. 1 1/2" W. HKS cut  
flush and abandoned. That new 1 1/2" W. HKS REJECTED & ABANDONED  
and set as marked in drawing. (1) 1/1688 1-24-84

PLACED ON [illegible] 1-24-84  
UP THE [illegible] 1-24-84  
CUT SOCKET, [illegible] 1-24-84

**PAGE 43 OF 48**

RECEIVED  
1-25-84  
including Resolutions

APP. FORWARDED  
SEE U.T. LOG  
DR OF Q. 2-9-84

See Dr. Ch. S. S. 1-25-84  
1-25-84

FORM 7-64		FEDERAL POWER COMMISSION		421-49		EPC-921		-63	
1. LOCATION OF SUPPORT STRUCTURE (SEE DRAWING)									
2. TRAVING TRAILS AND APPROACHES (SEE DRAWING)									
3. APPROACH DISTANCES AND TERMINATES AT 2.0. (1) DISTANCE TO DISTANCE AND (2) DISTANCE TO DISTANCE									
3. DRILL/PILE SYSTEM TO TELEPHONE TYPE: H101/PH11102									
4. TYPE AND INSTALLATION SIZE (1) DIST. (2) TYPE: H101/PH11102									
5. APPROX. TORQUE SIZE VALUE (1) DIST. (2) TYPE: H101/PH11102									
6. DRILL HOLE DRY Packed									
7. BACK OFF HOLE FROM TO CENTER OF BACK PLATE									
8. PILE-UP: A. Pile arrangement installation: (1) Base 20: (2) P.O. 20:									
9. Support Members: (1) Groove & Pull For Voids									
10. Pile Installation where required									
11. TAIL FEED HOLE OF PAINT, OIL									
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FOR DELETION PER MEMO # 089

1. ALL SHEETS INCLUDING
2. TENSILE, COMPRESSION AND STRESSING
3. TENSILE: T-BOLETS, TWO SHEETS AND LIPS
4. TENSILE PLATES: SPREAD LAMINATE OF BOLTS IN PLATE
5. SHEETS: TACK WELDS
6. JOINT FOR STEEL BOLTS
7. ARC STITCHES
8. MATERIAL SIZE
9. OVERLAPPING BOLTS IN PLATE, VARIOUS
10. VARIOUS BASE PLATES/STITCHES

*Handwritten notes and signatures:*  
 11/11  
 11/11  
 11/11

**PRELIMINARY SHEETS:**

*Handwritten notes:*  
 PRELIMINARY COMPLETE REMOVE AND LOAD SHEET  
 SECRET STAINS (11/11) 11/11 11/11  
 6 PER MEMO 1220

**FINAL INSPECTION SHEETS:**

**INSPECTION**

**DATE**

*Handwritten notes and signatures:*  
 11/11 11/11 11/11  
 11/11 11/11 11/11  
 11/11 11/11 11/11



YOUR  
WAY SOON

INFO COPY IS

ATTACHED  
JKV

REQUEST # \_\_\_\_\_

[illegible]

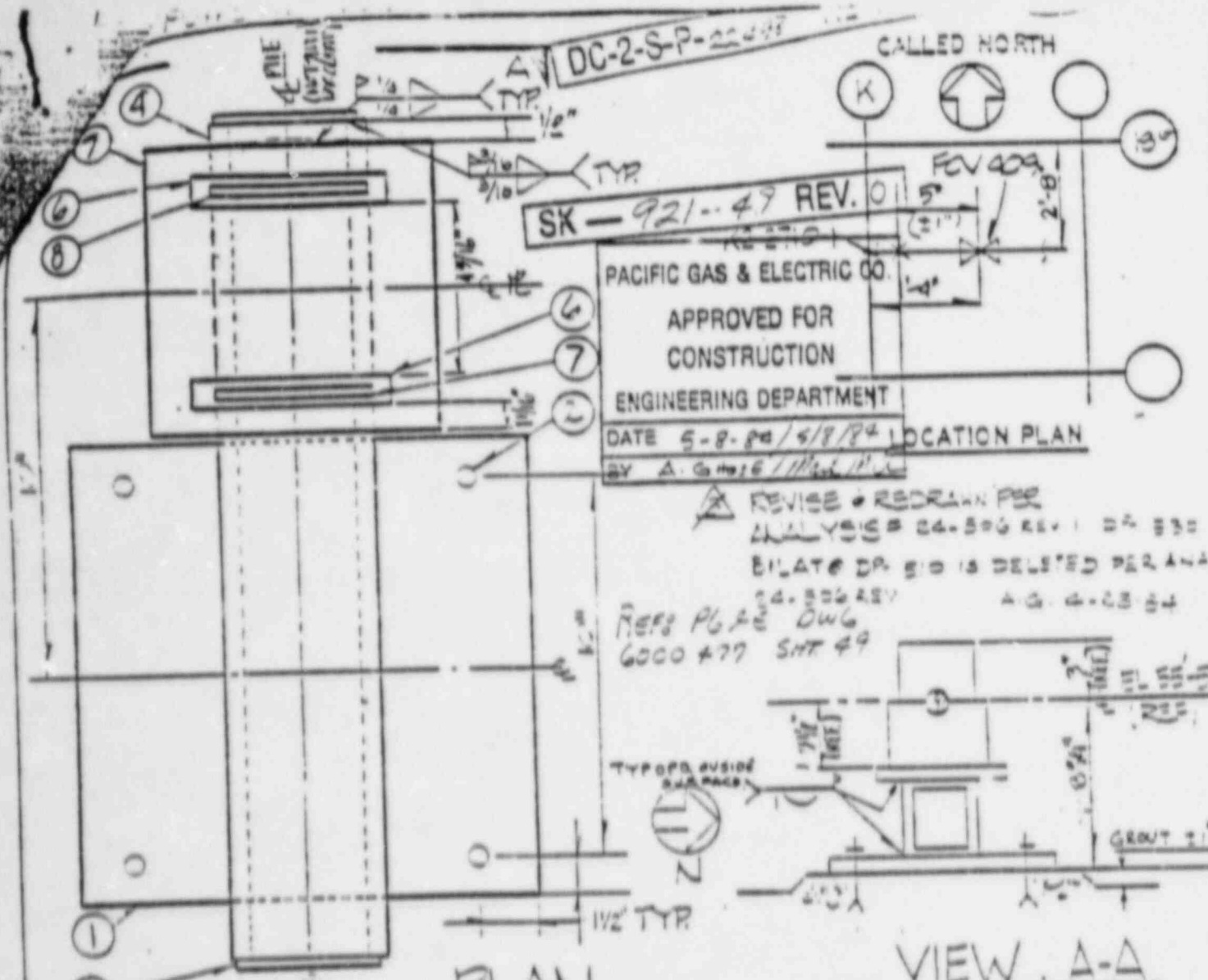
REASON FOR REQUEST: LAYOUT DRILLING OF 9-21-49 DC-2-S-R-22498, REV. D  
REQUIRES REMOVAL OF ALL ITEMS OF THE PREVIOUS EXCEPT ITEMS  
(5) (6) (7) AND (8) (THE TYPE 12 ANCHOR).

P.P.P. DATE: 5-17-34

### II. DISPOSITION:

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814 2815 2816 2817 2818

Page 16 of 48



# BILL OF MATERIALS

ITEM NO.	QTY.	SIZE	DESCRIPTION	MTL.
1	1	R 3/4" x 12" x 12" W/ (4) 3/16" Ø HOLES	NEW	A-56
2	4	3/4" Ø HILTI KWIK BOLT W/ 1/4" G" EMB	NEW	A-56
3	2	R 1/2" x 3/4" x 3/4" LG.	NEW	A-56
4	1	T.Y. 4" x 4" x 1/2" 1'10" LG.	NEW	A-56
5	1	R 3/4" x 6" x 6" LG.	NEW	A-56
6	2	R 1 1/4" x 7 1/2" x 6" LG.	NEW	A-56
7	1	R 1 1/2" x 7" x 3" LG.	NEW	A-56
8	1	R 1 1/2" x 7" x 3" LG.	NEW	A-56

UNLESS OTHERWISE SPECIFIED

REF DWG. 5000-477 SYS 24

CLASS E/E UNIT 3 AREA 1

DESIGN 5-8-84

DATE 4-26-84

# PIPE SUPPORT

DWG NO. 5000-477 REV NO 01

ANCHOR SHT 1 OF 2

FOR INFORMATION ONLY

# LLMAN POWER PRODUCTS

PACIFIC GAS & ELECTRIC CO.

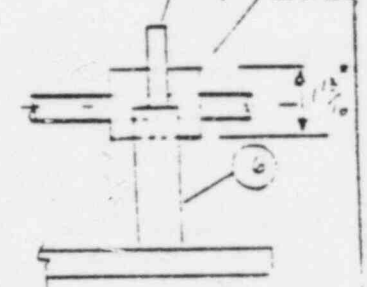
APPROVED FOR  
CONSTRUCTION

ENGINEERING DEPARTMENT

DATE 5-8-84 / S/E/P4

BY A. GHOSH / Mark

EXIST  
COUPLING



DETAIL 'A' - SEISMIC SIDE  
SHOWING COUPLING

## WELD ANCHOR TYPE 12

PIPE Ø INCHES (SCH 80)	THK IN	WELD SIZE			PLATE "A"			PLATE "B"		
		d	b	c	L1	R1	E1	L2	H2	E2
		IN	IN	IN	IN	IN	IN	IN	IN	IN
2" Ø (2.375)	.218	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1/2"
1 1/2" Ø (1.9)	.2"	5/16"	5/16"	5/16"	6"	3 1/2"	1 1/4"	5"	3"	1/2"
1" Ø (1.315)	.179	1/4"	3/16"	5/16"	5"	3 1/2"	3/4"	4"	3"	1/4"
3/4" Ø (1.050)	.154	1/4"	3/16"	5/16"	5"	3 1/2"	3/4"	4"	3"	1/4"

SEISMIC SIDE

NON-SEISMIC

NOTE: - FOR PLATE SIZES  
REFERS BILL OF MATERIAL

### NOTE:

1. ANCHOR TO BE USED FOR SCH 80. OR LESS.
2. PLATE MATERIAL FOR CARBON STL PIPE IS: STEEL A-515 GR. 65
3. PLATE MATERIAL FOR STAINLESS STL PIPE IS: STEEL A-240 TYPE 304
4. ANCHOR TO BE USED ONLY AT CODE BREAKS BETWEEN PG AND E DESIGN CLASS

### I AND II PIPING

5. ANCHOR DESIGN, TYPE 12 IS BASED ON THE MAX. POSSIBLE LOADS THEREFORE, ALLOWABLE LOADS ARE NOT NECESSARY

6. SUPPORTING STL AND WELD TO THE ANCHOR TO BE QUALIFIED BY THE ENGINEER

DC-2-S-P-22498 REV. 0

SK - 921-49 REV. 0

UNLESS OTHERWISE SPECIFIED

REF. DWG. 400921 SYS 24

PIPE SUPPORT

CLASS E/E' UNIT 2 AREA H

ELEV 95' DESIGN 6409E

DWG. NO. 921-49 REV. NO. -

ISO 24-617 DATE 4-26-84

SHT 2 OF 2

FOR INFORMATION

DATE 5

DRAWING NO. 1000000000

PAGE 48 OF 48

# PULPIT GAS AND ELECTRIC COMPANY

SHALE CANYON PROJECT • GENERAL CONSTRUCTION  
PO BOX 111, SHALE CANYON, CALIFORNIA 92342 • (913) 855-0000

April 27, 1984

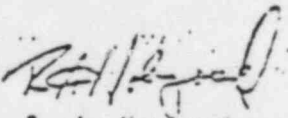
H. W. Karner  
Fullman Power Products  
Shale Canyon Project

Dear Mr. Karner:

A Quality Concern has been conveyed to our department through the Quality Hotline which requires your immediate attention. Of concern is the possibility that supervision may indirectly and/or unintentionally be intimidating the Quality Assurance Document review personnel into not documenting deficiencies.

The caller was concerned that the proficiency of the QA Document Review Program could be affected by the possibility of supervisory reprisals and/or termination of employment as a result of performing the person's job. In short, the caller was concerned that if anyone documented a deficiency, management would take some disciplinary action against them. While our investigation did not reveal such an official PPP Management policy, the Hotline investigator did talk to others who had the same concern. For this reason, it is requested that this situation be evaluated in your organization and appropriate discussions take place with your document review supervisors to relieve this concern. Please provide written response to this office on actions taken.

If you should have any questions or wish to discuss this subject further, please contact this office at ext. 3045.

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

Reply requested: Yes  
Due Date: May 4, 1984  
RAH/STetson:klh  
cc: E. Lieber  
J. Manning  
L. Rosetta

100

14468



INTEROFFICE CORRESPONDENCE

DATE MAY 11, 1984  
TO ALL QA SUPERVISORS AND LEADS  
FROM H. KARNER  
SUBJECT POSSIBLE SUPERVISORY INTIMIDATION OF EMPLOYEES

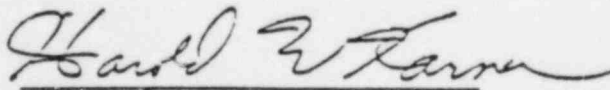
Information has come to me regarding the possibility that QA Document Review personnel are being dissuaded from documenting deficiencies, found during review of documentation, by means of supervisorial reprisals, such as disciplinary action and/or termination of employment. (Reference: PG&E letter dated 4-27-84.) This is not an isolated case, but has been stated by several concerned individuals.

Any attempt by supervision to intimidate employees, whether directly or indirectly, will not be tolerated under any circumstances. If an individual feels that a deficient condition exists, he or she has the right and the responsibility to identify it in accordance with approved procedures. This can be in the form of exceptions noted on checklists, etc., rather than a DR/DCN until it can be discussed.

If, on the other hand, you feel it is not a deficient condition, based upon approved ESDs, specifications and/or codes, it is your responsibility to inform the individual and prove the basis for your decision. If the identified deficiency is, in fact, valid, supervision can not prevent or attempt to discourage an individual from documenting the deficiency. The solution is to correct the deficiency.

In order to maintain a good Quality Assurance organization, we must allow the system to work. If our QA personnel do not have the ability to use the system as it was designed to work, then the integrity of quality at Diablo Canyon is in jeopardy.

I expect every person that is in a supervisory or lead position to act in a responsible and objective manner when addressing potential deficient conditions regardless of who the person is that identifies the condition. Abuse of authority will not be tolerated when used to sway individual actions because of personality conflicts.

  
Harold W. Karner  
QA/QC Manager

HWK:sam

## AFFIDAVIT

My name is Timothy J. O'<sup>16</sup>Neill. I am providing this statement to respond to statements made by Mr. D. A. Rockwell in his June 19, 1984 affidavit. I believe that Mr. Rockwell's affidavit contains many misleading or false statements as I'll identify below.

1.) Mr. Rockwell states that I was identified in PG&E's May 17, 1984 submittal. Although this is true, it is not complete. My identity was compromised in SSER 22. This occurred because the NRC, in my opinion, mishandled the information I provided to them under a letter of confidentiality. By providing my identity to Pullman, the NRC encouraged management's negative responses toward me, which hampers my ability to identify quality-related problems.

2.) Mr. Rockwell states that I suffered no harassment as a result of my affidavits or allegations. Again this is a false statement. Not only do I consider PG&E's May 17, 1984 submittal an act of harassment, but also the affidavit of Mr. Rockwell that confirms me as an anonymous allegor. As a result I feel the QC department has been ordered not to document problems on DR's (Discrepancy Reports). PG&E publicly states "anyone at the plant can write a DR." This statement is not true, Pullman QC inspectors cannot. I believe this is Pullman's method of preventing me from continuing to identify discrepancies to PG&E. This action occurred after my identity became suspect because of the Region V NRC mishandling the information I provided to them.

3.) Mr. Rockwell states that there have been no reports to supervisors, or hot-line reports. Again this statement is misleading and false. I have verbally informed Pullman management of instances of harassment. I documented by letter to H. Karner (Attachment 1) the details of another instance of harassment. On another occasion I identified to the QC hot-line what I feel to be implicit management harassment by discouraging QC inspectors from documenting procedural discrepancies on a Discrepancy Report (DR). Harassment from management is centered on the individuals who do not blindly accept verbal or improperly controlled instructions.

4.) Mr. Rockwell's statement concerning our June 12 meeting implies that I forced my way into his office. Again this is a misleading statement. The meeting was arranged by the Quality Hotline Supervisor, Dave Stetson. I was hesitant to take verbal <sup>responses</sup> replies to my issues. I requested the responses to be formal and in writing. Mr. Rockwell agreed. I made no demands as implied in his statement, and to date have not received any reply in writing from PG&E or the QC Hotline.

In conclusion, although my identity is anything but anonymous, the issues have nothing to do with who made the statement. PG&E should address the problems in a responsible manner, rather than the persons making the statements. It is a QC inspector's duty, under 10 CFR 50 App. B to identify quality-related problems, to suggest solutions, and to follow through on their resolution. PG&E and Pullman's responses to problems make this difficult. The NRC, to date, has not independently investigated all of the problems.

They have only provided affidavits to PG&E for answers and this compromised the identity of the alleged. I did not verbally report any details of acts of harassment to Mr. Rockwell because I had previously documented the harassment within the system. Had the system been functioning properly Mr. Rockwell would have been aware of the acts. He did not address the issue nor ask any questions about harassment.

I have read the above 3 page statement and swear that it is true, complete and accurate to the best of my knowledge and belief.

Timothy J. O'Neill  
Timothy J. O'Neill

State of California )  
County of San Luis Obispo ) SS

Timothy J. O'Neill, being duly sworn, depose and says: I have read the above 3 page affidavit and it is true, accurate and complete to the best of my knowledge and belief.

Timothy J. O'Neill  
Timothy J. O'Neill

Subscribed and sworn before me on June 29, 1984



Lisa R. Wenter  
Notary Public



TO: K. FELKER, LEAD  
J. WATSON, SUPV.  
H.W. KARNER, QA/QC MANAGER

DATE: JUNE 6, 1984

FROM: T. O'NEILL, QC INSPECTOR

SUBJECT: CRAFT HARASSMENT

THIS LETTER IS TO DOCUMENT AN INSTANCE OF HARASSMENT WHILE PERFORMING SURVEILLANCE INSPECTIONS IN ACCORDANCE WITH ESD 219, WELD PROCEDURE MONITORING.

ON TUESDAY, JUNE 6 I WAS INFORMED THAT CRAFT WORKING ON SUPPORT 46/3A, RHR PUMP ROOM ON ELEV. 64 AUXILIARY, MAY NOT BE FOLLOWING PROPER INTERPASS TEMPERATURE CONTROL PER ESD 215 PARA. 8.8. I WENT TO THIS LOCATION ON THE BASIS OF RANDOM SURVEILLANCE TO CHECK COMPLIANCE WITH ESD 219 PARA. 3.9, 3.10, AND 3.11. I CHECKED THE TORCH FLOW RATE, AND FOUND IT TO BE 15 CFH AT THE FLOWMETER. THIS IS IN NONCOMPLIANCE WITH THE 15/16 WPS, WHICH SPECIFIES 20 CFH MIN. I CONSULTED PAT WATSON, WELDING SUPERVISOR (QC) AS TO APPROPRIATE COURSE OF ACTION. PAT SAID TO INFORM WELDER AS TO PROCEDURE REQUIREMENTS, WHICH I DID AND SO NOTED ON PIPING PROCESS SHEET. I ALSO NOTICED CRAFT WAS NOT USING A 350°F TEMPISTICK TO MONITOR INTERPASS TEMPERATURE. I INFORMED CRAFT AS TO THIS REQUIREMENT AS WELL. NO HOLD TAG WAS APPLIED AS NO OBVIOUS WELD DEFICIENCIES WERE NOTED.

WHILE PERFORMING INSPECTIONS NOTED ABOVE, I WAS SUBJECTED TO VERBAL ABUSE BY THE FITTER WORKING AT THIS LOCATION. COMMENTS RANGED FROM "WHY ARE YOU BIRD-DOGGING US" TO "YOU HAVE AN ATTITUDE PROBLEM BECAUSE YOU DON'T GET ALONG WITH US". I REPLIED I WAS ONLY DOING MY JOB MAKING SURE PERSONS WERE FOLLOWING PROCEDURES, AND MY "ATTITUDE" HAD NOTHING TO DO WITH FOLLOWING THE PROCEDURES. I INQUIRED IF CRAFT KNEW WHAT THE FLOW RATE FOR THIS PROCEDURE WAS. THE REPLY WAS, "YOU ARE SUPPOSED TO KNOW THAT." I REPLIED THAT IT WAS THEIR RESPONSIBILITY TO KNOW PROCEDURE, AND MINE TO MONITOR IT. THIS IS THE SECOND TIME I HAVE BEEN HARASSED BY MEMBERS OF THIS CREW FOR ATTEMPTING TO MONITOR WELD PROCEDURE DETAILS. THE FIRST INSTANCE OCCURED WHILE WELDING STANCHIONS FOR PREVIOUS DESIGN OF THIS HANGER. THIS INCIDENT WAS DISCUSSED WITH QC MANAGEMENT, CRAFT GENERAL FOREMAN AND SUPERINTENDANT. I WAS TOLD THAT CRAFT WAS NOTIFIED

(CONTINUED)

THAT INCIDENTS OF THIS TYPE WERE UNACCEPTABLE, AND WAS SATISFIED THAT APPROPRIATE CORRECTIVE ACTION HAD TAKEN PLACE. I FEEL IT HAS NOT, IN LIGHT OF THIS LATEST INCIDENT, THEREFORE IT IS BEING DOCUMENTED HERE. AFTER THIS RECENT INCIDENT OCCURED, I INFORMED LEAD K. FOELKER AS TO THE CONTENT OF THE DISCUSSION. ON WEDNESDAY MORNING, JUNE 6, I DETAILED THIS INCIDENT TO SUPERVISOR J. WATSON, WHO STATED HE WOULD SPEAK TO CRAFT FOREMAN. THIS CONVERSATION OCCURED AT THE BEGINNING OF THE SHIFT ON WEDNESDAY, JUNE 6.

AFTER SPEAKING WITH SUPERVISOR WATSON, I ALSO SPOKE WITH CRAFT GENERAL FOREMAN, AS HE WAS INVOLVED WITH THE PREVIOUS INCIDENT AS PREVIOUSLY DESCRIBED. GENERAL FOREMAN ASKED IF I WAS "NITPICKING, BIRD-DOGGING, AND CREATING SOME "BULLSHIT". THE UPSHOT WAS I WAS NOT "TRYING TO WORK WITH THE CRAFT." I REPLIED THAT AS LONG AS CRAFT WERE FOLLOWING PROCEDURES, OUR WORKING RELATIONSHIP WAS FINE. AGAIN, MY "ATTITUDE" WAS MENTIONED. HIS POSITION WAS THAT HE DID WANT PROCEDURES FOLLOWED, WHICH I ALSO AGREED WITH. I EXPLAINED PROCEDURE, IN THIS INSTANCE, WAS NOT BEING FOLLOWED AND THAT FURTHER TRAINING MAY BE REQUIRED. I FEEL MOST OF MY REJECTIONS ARE DUE TO LACK OF KNOWLEDGE OF PROCEDURAL REQUIREMENTS ON THE PART OF THE CRAFT. AS A MINIMUM, WELDING REQUIREMENTS SHOULD BE INCORPORATED INTO AN ESD TRAINING PROGRAM. CRAFT GENERAL FOREMAN STATED HE WOULD INSTRUCT CRAFT THAT INCIDENTS OF THE TYPE WILL NOT BE TOLERATED. AS THIS WORD WAS SUPPOSEDLY PREVIOUSLY GIVEN TO CRAFT, I FEEL THIS INSTRUCTION WAS INADEQUATE.

IN CONCLUSION, I REQUEST DOCUMENTED EVIDENCE THAT APPROPRIATE INSTRUCTION AS TO PROCEDURAL REQUIREMENTS HAS OCCURED, AND THAT ALL PERSONS ARE INSTRUCTED THAT INCIDENTS OF THE TYPE HER DESCRIBED HEREIN ARE VIOLATIONS OF FEDERAL LAW. YOUR IMMEDIATE RESPONSE TO THIS MATTER IS REQUESTED TO PREVENT RECURRENCE.

I WAS INFORMED BY TIM O'NEIL ON JUNE 6, 1984 AND THEN SPOKE WITH "LEE HARRISON" GENERAL FOREMAN ABOUT THE CRAFT ATTITUDE TOWARDS QC INSPECTORS JOB. 4/6/84 QC LEAD

Timothy J. Child 1/15/84  
6/6/84

acknowledged: *[Signature]*  
6/6/84

EXHIBIT 6



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

JUN 11 1984

Docket Nos.: 50-275  
and 50-323

MEMORANDUM FOR: Chairman Palladino  
Commissioner Gilinsky  
Commissioner Roberts  
Commissioner Asselstine  
Commissioner Bernthal

FROM: Darrell G. Eisenhut, Director  
Division of Licensing

SUBJECT: MEETING ON MAY 22, 1984 WITH GAP REGARDING DIABLO CANYON  
(BOARD NOTIFICATION NO. 84-114)

In accordance with the NRC procedure for Board Notification the enclosure is provided to the Commission for information. The enclosure is a transcript of a meeting held on May 22, 1984 by members of the NRR staff with an individual represented by Mr. Thomas Devine of the Government Accountability Project (GAP) and with Mr. Charles Stokes a former employee at the Diablo Canyon project, representing himself. The meeting had been requested by Mr. Devine. The meeting was closed and was transcribed by an official reporter. Mr. Stokes also made a tape recording.

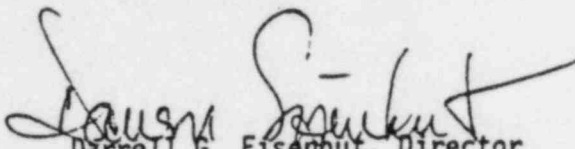
At the meeting the individual and Mr. Stokes made allegations and expressed concerns regarding certain design and construction aspects of piping supports, including the implementation of quality control requirements. During the meeting Mr. Devine referred to additional affidavits which he subsequently submitted by letter dated May 31, 1984 and which are the subject of a separate Board Notification. The individual and Mr. Stokes provided a number of examples regarding their concerns. No copies of that information was retained by the staff but an attempt was made to identify that information on the record.

Mr. Devine stated that the individual had a confidentiality agreement with the NRC from an earlier meeting and requested that it be applied to this meeting. Accordingly, consistent with the Commission's Statement of Policy on Investigations and Adjudicatory Proceedings (48 Fed. Reg. 36358) the transcript is made available in camera to the Commission and to the ASLAB and their staff. We will be available to advise the Commission as to this determination. The transcript is also provided in camera to the Office of Investigation and to Region V for their determination, with respect to any of their investigations or inspections, if the transcript can be released publicly, in total or in

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part. If the determination is affirmative we will provide the transcript to Mr. Devine requesting deletion of any information that, in his opinion, could compromise the confidentiality to his client. If the determination is negative we will not release the transcript until the investigation or inspection has been completed.

By copy of this memorandum we are also providing the in camera transcript to the ASLAB. The parties to the proceeding and the service list including Mr. Devine, are being notified by copy of this memorandum without enclosure.

  
Darrell G. Eisenhut, Director  
Division of Licensing  
Office of Nuclear Reactor Regulation

Enclosures:  
As stated

cc: J. F. Wolf, ASLB w/enclosure  
G. O. Bright, ASLB w/enclosure  
J. Kline, ASLB w/enclosure  
T. S. Moore, ASLB w/enclosure  
W. R. Johnson, ASLB w/enclosure  
J. H. Buck, ASLB w/enclosure  
SECY (2) w/enclosure  
EDO w/enclosure  
OGC w/enclosure  
OPE w/enclosure  
Parties to the Proceeding w/o enclosure



# ORIGINAL

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

#31

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In the matter of:

Docket No.

**IN CAMERA DOCUMENT**

CONFIDENTIAL INTERVIEW BETWEEN  
NRC STAFF AND THE GOVERNMENT  
ACCOUNTABILITY PROJECT

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Location: San Francisco, CA.

Pages: 1 - 127

Date: Tuesday, May 22, 1984

**IN CAMERA DOCUMENT**

**TAYLOE ASSOCIATES**

Court Reporters  
1625 I Street, N.W. Suite 1004  
Washington, D.C. 20006  
(202) 293-3950

# ORIGINAL

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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In the matter of:

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Location: San Francisco, CA.

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CONFIDENTIAL TRANSCRIPT

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

CLOSED MEETING

NRC STAFF WITH THE GOVERNMENTAL ACCOUNTABILITY PROJECT

The Vagabond Inn  
First Floor Conference Room  
2550 Van Ness Avenue  
San Francisco, California 94109

Tuesday, May 22, 1984

The meeting in the above-entitled matter  
commenced at 7:05 p.m.

Meeting Participants:

H. SCHIERLING, NRR Licensing, Presiding  
D. VOLLMER, NRC/DE  
J. KNIGHT, NRC/DE  
B. BOSNAK, NRC/DE  
I. YIN, NRC, Region III, Sr. Mech. Engineer  
B. SAFFELL, Battelle Columbus Laboratories  
T. BURR, EG&G, Idaho  
D. MORTON, EG&G, Idaho  
T. DEVINE, GAP  
T. O'NEILL, PPP QC Inspector  
C. STOKES, Ex-Diablo Pipe Support Inspector

- - -

**TAYLOE ASSOCIATES**  
1625 I STREET, N.W. - SUITE 1004  
WASHINGTON, D.C. 20006  
(202) 293-3950

1 MR. SCHIERLING: Okay, fine.

2 I am glad we got all your comments on the  
3 record. Just for the record, and if you later on want to  
4 make more comments, that is fine, this is a meeting  
5 between the NRC and Mr. Tom Devine of the Government  
6 Accountability Project and two of his clients that he is  
7 representing.

8 For the record, it is understood that this is a  
9 meeting, as you already indicated, where we will treat the  
10 identity of Mr. O'Neill as confidential. We will refer to  
11 him as Mr. O'Neill in the transcript. However, the  
12 transcript will not be made publicly available at this  
13 time.

14 We are currently developing a policy and an  
15 approach that we will apply to making these transcripts  
16 publicly available in whatever form is appropriate without  
17 violating any of the confidentiality agreements.

18 Off the record for just a moment.

19 (Discussion off the record.)

20 MR. SCHIERLING: Let's go back on the record.

21 With regard to your request for  
22 confidentiality, and we talked about that briefly,  
23 regarding the affidavits, I do not know if there is  
24 anything available in the hotel here. Some of us will be  
25 at the site tomorrow morning and if you feel it is needed,



1 I am Hans Schierling with the Nuclear  
2 Regulatory Commission, the Licensing Project Manager for  
3 Diablo Canyon.

4 MR. VOLLMER: I am Dick Vollmer, Director of the  
5 Division of Engineering.

6 MR. SAFFELL: My name is Bernie Saffell. I am  
7 with Battelle Columbus Laboratories and I am functioning  
8 as a consultant to the Nuclear Regulatory Commission.

9 MR. YIN: Isa Yin, NRC, Region III, Senior  
10 Mechanical Engineer.

11 MR. BOSNAK: I am Bob Bosnak, Mechanical  
12 Engineering Branch Chief. We have four of our people here  
13 who are the IC and DP Team at Licensing Condition No. 6.

14 MR. KNIGHT: Jim Knight, Assistant Director for  
15 Engineering, NRR.

16 MR. BURR: Tom Burr from EG&G, Idaho, consultant  
17 to the NRC.

18 MR. MORTON: Keith Morton, EG&G, Idaho,  
19 consultant to the NRC.

20 MR. DEVINE: Tom Devine, Government  
21 Accountability Project.

22 MR. O'NEILL: Timothy O'Neill. I am a Pullman  
23 Power Products QC Inspector.

24 MR. STOKES: Charles Stokes. I just represent  
25 myself as an ex-employee of Diablo Canyon.

**TAYLOE ASSOCIATES**

1625 I STREET, N.W. - SUITE 1004

WASHINGTON, D.C. 20006

(202) 293-3950

1 requirements and things, and the whole purpose of just  
2 saying a quick fix superceded a design drawing goes  
3 against sound engineering I feel.

4 MR. KNIGHT: Could I ask a question on one  
5 remark you made. You said your experience tells you you  
6 have to go beyond your design, and I didn't catch the  
7 word, but I understood design criteria.

8 MR. O'NEILL: In some cases your code  
9 requirements are minimal requirements. What I am saying  
10 there are instances in welding, for instance, where the  
11 code doesn't require post-weld heat treat or something,  
12 but experience with items says that you should post-weld  
13 heat treat, you know, or things of that nature.

14 MR. BOSNAK: You mentioned something about the  
15 quick fix giving you the authority or the capability of  
16 the people doing the fix to go beyond certain  
17 specifications. From what we have seen, they still have to  
18 use the DCM-9 and that ESD-223.

19 MR. O'NEILL: Okay. I am not familiar with  
20 DCM-9. I am very familiar with ESD-223. What I have seen  
21 the quick fix used for out there is to go around ESD-223.

22 MR. STOKES: In the concern with M-9, specific  
23 people, and I can provide names, were assigned to the  
24 quick fix program from the San Francisco office that were  
25 hired directly from the street population and placed in

1 documentation that he has brought and it will answer  
2 questions such as that you raised, and as he identifies  
3 documents you all think are relevant, we will make copies  
4 and provide them to you.

5 MR. SCHIERLING: Along that line, I would  
6 request, to the extent that you can do it, identify these  
7 documents as clearly as you can for the record so that if  
8 need arises we can go and search for them.

9 MR. O'NEILL: Okay. I have here a letter.  
10 Actually it is called a noteogram. It is what we use on  
11 site out there. When you have got a problem that you feel  
12 it is deficient, but you can't specifically say it is  
13 deficient to a certain engineering specification, they  
14 would like you to write it on a memo and then they can,  
15 you know, address it. Most times they try and tell you  
16 this isn't a problem and they do a real good job out there  
17 trying to keep you from identifying problems and I have  
18 that well documented. I haven't brought it tonight because  
19 we are specifically interested with the quick fix program.

20 We had a training session on March 7th, 1984  
21 which prompted me to write this memo to my lead man, Kevin  
22 Foelker and to my supervisor, Greg Chinery. The training  
23 session was held by a QA lead named Dan Teichman who got  
24 up and made a long winded speech about ESD-223, and what I  
25 brought away from the meeting, and I will read what I

1           A fundamental problem that they used the quick  
2       fix program for is to quick fix poor workmanship or say if  
3       you have a full penetration weld called out, the guy  
4       doesn't give full penetration. So now the game plan is to  
5       cry and get a quick fix to allow a partial penetration  
6       weld rather than grind it out and do it right. I have seen  
7       cases of quick fixes used in that manner.

8           MR. YIN: Do you have any examples for that?

9           MR. O'NEILL: Yes, as a matter of fact, I do.

10          MR. YIN: This sounds like a non-conformance  
11       report to me.

12          MR. O'NEILL: You know, there have been times  
13       that I have written up -- in fact, I would like to get not  
14       only into quick fixes, but we have got a layout appeal  
15       going on out there that I think is along the lines of this  
16       because the quick fix gets into that program.

17          MR. YIN: Let me ask you, your earlier statement  
18       kind of confused me a little because you said that you  
19       feel some of the designs were not adequate and you were  
20       asked to mind your own business. Well, I think it is just  
21       right that you should mind your own business and let the  
22       designer ---

23          MR. O'NEILL: As an inspector, yes.

24          MR. YIN: So if the designer messes around with  
25       QC, we certainly have a problem with that. So what is



1 know what the conditions of loading are and I don't even  
2 deal with that as an inspector. But when I, you know, see  
3 a weld that is called out as a full penetration weld and  
4 it is downgraded to a seal weld, I kind of take note of  
5 that.

6 MR. BOSNAK: I think the reason for the IC, as  
7 they call it, was that the fitter, and this was another  
8 problem, that the weld symbols were not properly called on  
9 on the drawings. In fact, some of them evidently had none  
10 on it. So he put down what he thought was correct and that  
11 had to be re-evaluated.

12 MR. SCHIERLING: Tim, to put things for the  
13 record a little bit in perspective, would it be possible  
14 for you to tell us your position, your function at the  
15 site, how long you have been employed there and also the  
16 items that you are talking about right now. Do they cover  
17 the entire period of your employment or the past or the  
18 present?

19 MR. O'NEILL: Mostly the documentation I have is  
20 from what I have seen from my period of employment. I  
21 began my term of employment as an inspector on July 5th,  
22 1983, and I am currently employed with Pullman. In that  
23 time I have addressed several welding engineering type  
24 problems that the management feels I should not even be  
25 involved with, but as an welding engineer with the

1       overstate what we are disclosing this evening. Tim is an  
2       inspector and he is raising issues that red flagged to  
3       him. He didn't follow through to do calculations and he  
4       couldn't have with his functions. So we are helping to  
5       identify areas for you all that he convinced me were  
6       significant.

7               MR. BOSNAK: Do you have any quick fix numbers  
8       or something like that that could be followed through?

9               MR. DEVINE: Yes, we do, and to the extent, sir,  
10      that you are interested, and you may be interested in  
11      everything we go through, we will provide copies for you  
12      of the documentation.

13              In fact, I would prefer in a number of cases  
14      that we provide you the copies rather than that you go to  
15      management to obtain them, because to the extent they are  
16      memoranda from Mr. O'Neill, that would sort of let the cat  
17      out of the bag.

18              MR. O'NEILL: I might add that has already  
19      happened in the Region V investigations. They are aware of  
20      the fact that I have been talking to the NRC.

21              This particular quick fix I wasn't actually  
22      involved with, but I was told what happened. I was  
23      involved with the construction of the hanger. This is TC  
24      No. 1-12667 or support 384, 386R, Rev. 1. It is a  
25      sprinkler hanger.

1 weld was changed from a full penetration to a 7/3ths  
2 partial pen. Construction difficulties in this case  
3 amounted to the fact that the guy couldn't get a  
4 full penetration weld on that.

5 MR. YIN: Yes, but this doesn't say that the  
6 weld has been completed. It just says because of  
7 construction difficulties. How do I know this is before  
8 the fact or is after the fact?

9 MR. O'NEILL: That is one thing that that quick  
10 fix doesn't address and you will have to take my word for  
11 it, but that was done after the fact.

12 MR. YIN: Before the fact is perfectly legal.  
13 After the fact there should be a non-conformance report.

14 MR. O'NEILL: We can look at that and look at  
15 the date that the weld was fit up in this particular case  
16 which is item 5 to item 3.

17 This is the drawing that they sent out to the  
18 field and asked me to do a final workmanship inspection  
19 on. Needless to say, it took 14 hours to do the final  
20 workmanship inspection on this one support. It was due to  
21 the fact that the engineers that were involved with it  
22 refused to do their inspection. They called me down and  
23 said, hey, as a favor will you come straighten this hanger  
24 out for us and tell us everything that is wrong with it so  
25 we can write one quick fix and get it bought off.

1 MR. YIN: You are talking about the same support  
2 now?

3 MR. O'NEILL: The same support. Most of it is  
4 quick fixes that have been rereved and redone.

5 Here is one that is rather interesting. They  
6 want you to rewrite the whole thing because it is  
7 confusing.

8 MR. SCHIERLING: For the record I think in one  
9 form or another we have to identify that because otherwise  
10 how do we know later on what we are talking about.

11 MR. SAFFELL: We have got the TC number.

12 MR. SCHIERLING: On, you have the TC number.

13 Quote whatever identification is on needed.

14 MR. YIN: This is the DP number.

15 MR. BOSNAK: Some of the TC's became DP's.

16 MR. O'NEILL: There is the DP that goes along  
17 with it.

18 MR. DEVINE: Tim, it would help them if each  
19 time you show a piece of paper that you give the ID at the  
20 top since they are changing numbers back and forth in  
21 here.

22 MR. YIN: What is wrong with this DP-13947P? It  
23 says what needs to be done is complete this nanger.

24 MR. O'NEILL: Here is the DP that you are asking  
25 about, findings and recommendations to DP-13947P.



1 Francisco had no idea what to put in without any loads. It  
2 was simply because I was told they needed a support in the  
3 YZ direction.

4 This package is an indication of the number of  
5 quick fixes written against various supports and the  
6 various reasons for them having been written.

7 Without these documents being included in the  
8 as-built review and the engineerings considering the  
9 entire package and now each TC developed, in various cases  
10 pertinent data has been overlooked in the as-built review  
11 program that is critical to the safe analysis of those  
12 supports.

13 Some TC's were written because anchor bolts hit  
14 drain lines which were supposed to be below a six-inch  
15 embedment. They weren't. They were three inches below the  
16 concrete surface.

17 The anchor bolt pattern was relocated due to a  
18 TC, but whether or not they avoided a cone interference to  
19 the drain line when they quick fixed it, I seriously  
20 doubt, and I very seriously doubt that without that TC  
21 being in there recording that the drain line was ever hit,  
22 whether or not their as-built reviewer took notice of it  
23 when he evaluated the anchor bolts on that package.

24 MR. O'NEILL: I might add, on the anchor bolts  
25 when you submit an as-built drawing, you submit it and it

1 being placed in the quick fix program, we were already  
2 getting as-built drawings back from the field. Those  
3 drawings were not the same as the drawings we sent to the  
4 field for construction.

5 At that time we did not really understand why  
6 they were not being built the way we had sent them there.  
7 we weren't aware in March that a quick fix program existed  
8 since January of '83.

9 For that same reason I chased down one support  
10 which I had sent to the field and the support was changed  
11 not by a quick fix, but changed by the person who routed  
12 the drawings to Pullman for construction. It was done  
13 without a second check and review strictly on his own.

14 Now the policy was then that as-builts came  
15 back. It was a single sheet, no more than one page  
16 typically, and that is all we had to review it on.

17 Now as a quick fix engineer, I found out there  
18 are various reasons for those hangers to be changed,  
19 hitting anchor bolts from other plates on the opposite  
20 side of the wall, hitting drain lines, having to relocate  
21 the bolts and plates, hitting copper ground lines and  
22 punching through the wall when San Francisco requested 10  
23 and a half inches embedment on inch and a quarter bolts  
24 and the wall was only 12 inches by drawing, which we never  
25 looked at because it was too difficult to chase down the

1 have been used to indicate how poorly they were doing  
2 their job because you could have monitored how many quick  
3 fixes were written against their work. It also never went  
4 back to be used for the as-built to indicate why the  
5 quick fix changed.

6 It indicates what thru-bolts. The guy asked for  
7 10 and a half inch bolts. If he gets back a quick fix  
8 showing thru-bolts, if it explains why the wall was only  
9 12 inches thick, he realizes that in his future designs  
10 there are 12-inch walls he needs to change, and at the  
11 same time he realizes that it didn't change arbitrarily.  
12 In other words, he can review why a change happened beyond  
13 the fact that construction just didn't want to do it that  
14 way.

15 Frequently welds were not made because the  
16 welder -- it was welder error. He welded all around even  
17 enough it was showing two sides. That is good, but at the  
18 same time you had underwelding when it was welder error  
19 and they were quick fixed away.

20 What I am saying is that the changes would have  
21 been more relevant to the engineers doing the review and  
22 at the same time certain issues might have caused that  
23 support that was as-built and accepted to fail under an  
24 as-built had they had the TC's there to look at.

25 MR. YIN: Let me ask you this. Is there anything

1 as-built and we are taking a large sample of the TC's,  
2 quick fixes, DP's and so forth to look into it and whether  
3 or not they have handled the review adequately.

4 So if you have additional supports that you  
5 think you have a problem with, try to organize it and we  
6 will look at it all.

7 MR. O'NEILL: I have got a DP here that you  
8 might be interested in. This is a DP that I came  
9 across ---

10 MR. YIN: Read me the number.

11 MR. O'NEILL: Okay. Actually a realiner was sent  
12 out to do this nanger and he came to me and said, hey, the  
13 welds on this don't look good at all and why don't you  
14 come take a look at it.

15 DP No. 12335-P, I have identified this when I  
16 met with Region V. what they have here is they have an  
17 embedded plate. Okay, now this is also, as you guys would  
18 consider, it is class one, seismic class one. It is not  
19 safety related, but in any new plant this would be a  
20 safety related support. It is on the feedwater line coming  
21 out of the pipe rack and on the northwest side of the  
22 containment building.

23 The thing that caught my eye on it ---

24 MR. VOLLMER: The main feedwater?

25 MR. O'NEILL: Yes.

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1 anywhere as being a weldable material either. Its  
2 chemistry is similar to A-325.

3 MR. YIN: So they documented the deficiency and  
4 what was the problem?

5 MR. O'NEILL: I documented the deficient welds,  
6 the disposition. There is a TC in this package where they  
7 tried to accept the deficient welds and the person doing  
8 the quick fixing said no, these welds are deficient. I can  
9 get that for you.

10 There is your DP. The TC in there, they asked  
11 him will you accept these welds and the person says no,  
12 you can't go out and rebuild them. They went out and in  
13 the process a field engineer misread the disposition on  
14 the DR and they didn't completely redo the disposition.

15 As a matter of fact, on this support the other  
16 day I signed one of our training sheets on an NCR that was  
17 written on this support that I can't understand how after  
18 I had written this DR, and you might read the number  
19 there.

20 (Document handed.)

21 MR. SAFFELL: It is TC 1-14461.

22 MR. O'NEILL: I realize you guys don't think  
23 this is safety related, or it is not safety related, but  
24 this kind of thing right here is the way it is done out  
25 there. If you have got a deficient condition and you can

1 field condition and they would come back and try and get a  
2 QC written to authorize it.

3 Okay, now, if it was within ESD tolerances, you  
4 didn't have to get the quick fix I believe. Okay, we have  
5 a change to an as-built within ESD tolerances, a  
6 corrective action for the redliner to correct the as-built  
7 and to initial and date the change. This is a QC accepted  
8 package.

9 Now QC is to verify the correction and the QC  
10 shall note correction changes on the back of the process  
11 sheet and the method of justification which nobody did.  
12 All you wrote was that you were changing this with the  
13 knowledge and approval of the QC manager.

14 MR. YIN: I heard a couple of times redliner. Is  
15 that a person or is it a function or how does it work?

16 MR. O'NEILL: A redliner is the drafter that  
17 comes out and draws the as-built drawing. The way the  
18 process goes is the package is QC workmanship inspected,  
19 which brings up another can of worms, that we don't follow  
20 our procedure on that, but we will leave that alone.

21 MR. YIN: Is a redliner a procedure term or do  
22 you just use it?

23 MR. O'NEILL: That is a term we use out there,  
24 because once the package is accepted for workmanship it is  
25 as-built. The redliner is the guy that comes out and draws

1 workmanship.

2 It would go to the Engineering Department to be  
3 as-built. You would come out and you would do your QC  
4 final inspection by comparing the as-built drawing to the  
5 approved for construction drawing and check it. That was  
6 the first step that I would do when I would do an  
7 as-built. I would look at the approved for construction  
8 and all of the tolerance clarifications in there, the  
9 TC's, and make sure that that as-built drawing reflected  
10 everything that was done in the field on the construction  
11 cycle.

12 Then I would compare the as-built drawing to  
13 what is actually out there on the wall, and if I found a  
14 discrepancy there, I didn't write a non-conformance report  
15 because the package was still, it was still in the  
16 document control stage is how it is done out there. I  
17 would write up all my reject comments, like this dimension  
18 isn't right.

19 If it is an obviously deficient condition, then  
20 I would write what is called a deficient condition notice.  
21 But for the most part any rejectable items on that  
22 as-built would be written on a sheet that doesn't become a  
23 permanent document of any kind and it would be rejected  
24 back to the Engineering Department for them to do whatever  
25 they did.

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1 basically takes both of those and says you can do this or  
2 this, whatever the engineer can talk you into.

3 You have got ESD 268, which is deficient  
4 condition reporting. The definition of a deficient  
5 condition, according to that specification, is an item  
6 that can be corrected through the normal course of  
7 construction and should be identified on a deficient  
8 condition notice.

9 Okay, ESD 240, which is non-conformance  
10 reporting, which we call a discrepancy report out there, a  
11 DR, says that items that are non-conforming procedurally,  
12 non-conforming materially, items that cannot be corrected  
13 during the normal course of construction shall be  
14 identified on a discrepancy report. Those go to PG&E and  
15 are dispositioned by them usually.

16 MR. YIN: Okay. Disregard all those problems.  
17 Isn't it that the final analysis still lies on the fact  
18 that the engineer has evaluated as-builts, has done a good  
19 job in evaluating them and we selected a large sample of  
20 it and evaluate it? So this is kind of already history.  
21 They haven't got a nice QA program in there. They haven't  
22 followed the procedures. We knew that. They haven't got  
23 the training and document control is defective. All those  
24 things we knew.

25 But the situation is now to resolve that issue,



1 about that until another inspector told me that that even  
2 existed or how it related to what we were doing.

3 MR. YIN: Is that that cassette ---

4 MR. O'NEILL: Yes, that they recently came up  
5 with.

6 MR. YIN: Right. I saw that just recently.

7 MR. DEVINE: Tim, has there been a new program  
8 of training classes or instruction for you all in the last  
9 few months?

10 MR. O'NEILL: Let me tell you how training is  
11 accomplished out there. Your lead man comes out with a  
12 stack of documents, and these are called STPR's, steps to  
13 prevent recurrence. The guy comes out and hands you a  
14 stack of documents and says here, read this and sign this  
15 sheet and that is your training on that particular thing.

16 In fact, the other day he brought out a whole  
17 handful of these, six of them that were generic  
18 non-conformance reports. I read them through and looked at  
19 them and noticed that these steps to prevent recurrence on  
20 the bottom are required to close NCR number whatever. And  
21 when I handed them back to my lead man, I said, whow, it  
22 looks like you have a few non-conformance reports here.  
23 And he goes no, these aren't non-conformances, they are  
24 just DR's. I said, well you had better look at that a  
25 little closer because every one of those is an NCR. He

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1 four months have you been working on Unit 1?

2 MR. O'NEILL: I was in Unit 1 about three months  
3 ago and I didn't see really any new construction going on.

4 MR. YIN: Okay. Now what you are talking about,  
5 all this stuff is Unit 2?

6 MR. O'NEILL: That has been my ---

7 MR. YIN: Now let me ask you, is there any  
8 program change in taking care of the TC's?

9 MR. O'NEILL: Well, in Unit 2 they are still  
10 called quick fixes. You have a QF number on them. They are  
11 only called TC's in Unit 1.

12 MR. YIN: You can call it anything you want, but  
13 the formal procedure is called TC. What I am asking you  
14 here is are they still practicing quick refix of the major  
15 modifications, you know, accepting or maybe changing  
16 design?

17 MR. O'NEILL: Absolutely. That is why I am here  
18 tonight.

19 MR. YIN: Do you have any evidence for that?

20 MR. DEVINE: I think probably the best way that  
21 we can make the point is by just going through some of  
22 these TC's one by one and finding the ones that you think  
23 are most significant.

24 MR. YIN: Yes. It is important to identify  
25 Unit 1 and Unit 2.

1 have been done for large bore, but it has never been done  
2 for small bore.

3 MR. YIN: Let me ask you this. Suppose I am  
4 telling you why should I really care about TC's. I can  
5 throw all the TC's away and I can throw all the paper away  
6 and I go out and I have the as-built and I do my  
7 calculation on the as-built. What is wrong with that? I am  
8 analyzing the hardware. Why should I care about what is  
9 going on in between two points. You know, it won't affect  
10 the safety operation of the plant at all, will it?

11 MR. STOKES: No.

12 MR. O'NEILL: Here is one thing that I have seen  
13 recently in Unit 2 that could affect that. You put a hilti  
14 quick bolt in the wall and then you decide that you don't  
15 want that there. You don't remove it and you just cut it  
16 off flush with the wall. There is no documentation of that  
17 and you move an anchor an inch and a half away from it and  
18 put another one right there, an inch and a half hilti  
19 quick.

20 MR. YIN: What is wrong with that as long as you  
21 as-built it?

22 MR. O'NEILL: It is not as-built. That bolt is  
23 not shown on the as-built drawing. You see four anchors on  
24 the as-built drawing ---

25 MR. STOKES: It is under the plate.

1 and they are asking me, a Pullman inspector, to document  
2 the depth of this hole that they hit rebar in so that they  
3 can make that when they epoxy group it and drill next to  
4 it that they are going to be drilling an inch and a half  
5 deeper than that epoxy grouted hole.

6 Now the problem I saw the first time they came  
7 to me with this is there was no documentation that I could  
8 put a QC inspection on. There was not approved for  
9 construction drawing and no approved special process sheet  
10 by the QA manager that I could tell, and it was just an  
11 uncontrolled operation.

12 There are holes all over the floor and I have  
13 got a couple of pictures of them here, and I wrote on this  
14 particular one, I wrote a DR. On that DR, I wrote that DR  
15 on February 29th and it to this day is not dispositioned.

16 Okay, these pictures aren't too good.

17 (Pictures handed.)

18 Again, this is a sprinkler hanger, but I can  
19 tell you there is a whole lot of safety related hangers  
20 that are done this exact same way right here.

21 You go down in the GL/GW area at 85 elevation  
22 of Unit 2 in the auxiliary building and look at the floor  
23 down there and you will see many, many holes drilled in  
24 there.

25 MR. STOKES: I personally quick fixed a support

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1 MR. O'NEILL: Okay. This was in response to a  
2 memo that I wrote on the 8th to my supervisor asking what  
3 is the extent of Pullman's participation in light of this  
4 form.

5 My supervisor writes back and says "After  
6 discussing the C-51 form, Rev. 215-84 with Harold Karner,  
7 the QA/QC Manager, he showed me correspondence addressed  
8 to PG&E questioning this form and Pullman's area of  
9 responsibility, this letter dated 5/3/84."

10 That doesn't answer my question. That says he  
11 sent a letter to PG&E. A week later I still haven't gotten  
12 answer on this question.

13 MR. YIN: Isn't it a fact that all the bolts  
14 have been either tested or maybe approved tested?

15 MR. O'NEILL: Okay. We are not even driving  
16 bolts yet. What these guys are out doing is they are just  
17 drilling holes, and now we have got a memo from PG&E.

18 Again, everything out there is done on memos.  
19 This memo is dated March 1st, '84 to R. D. Etzler from G.  
20 B. Kranston of San Francisco Project Engineering, and the  
21 highlights of this memo are that, "Note, if carbide tip  
22 bits are used and drilling is stopped as soon as  
23 reinforcing bar or other embedded metal is encountered,  
24 there is no requirement to inspect for damage since  
25 carbide tip bits for masonry use only will not cause any

1 MR. YIN: Well, now you insist, you know,  
2 knicking it. Now knicking it, now you can consider it  
3 damaging the rebar.

4 MR. O'NEILL: To me knicking the rebar doesn't  
5 seem to be that big a deal either ---

6 MR. YIN: That is right.

7 MR. O'NEILL: --- but our procedures says  
8 knicked or damaged rebar has to be identified. So they are  
9 going right around the procedure with, you know, with  
10 drilling these layout holes and not documenting any kind  
11 of inspection and not documenting where the hole was  
12 drilled.

13 Now I feel if you are going to drill all these  
14 holes you should as-built where you can dry pack the holes  
15 in there and there is no requirement for that.

16 MR. YIN: Well, I grant you that in some sites  
17 they may have more procedural control as well as locating  
18 the holes, drilling the holes and so forth. But I think  
19 the final analysis is still relying on whether or not the  
20 bolt will take the load. So if you meet the torquing  
21 requirements you will meet the bolt test requirement and  
22 what else do we care. If it doesn't look too good, well,  
23 that is too bad. If it can take the load, well, that is  
24 why we care, right?

25 MR. STOKES: How do the torquing figures

1 MR. YIN: Philips and the hiltis, the wedge  
2 type, right?

3 MR. O'NEILL: Right.

4 MR. YIN: Okay. The wedge type, we had a long  
5 discussion in 1979 in regard to the 7902 bulletin of how  
6 we resolve it, and it was the staff position to accept the  
7 torque testing as a proofing of the loads.

8 MR. STOKES: I have got several papers on torque  
9 proofing ---

10 MR. YIN: Well, I know for sure that you can  
11 lubricate a bolt and unlubricate a bolt and the factor is  
12 two to one, right? I know that.

13 MR. STOKES: Yes. But what I am saying is if you  
14 want to accept torque proofing, I think you should have  
15 specific criteria that you have accepted allowing that  
16 practice to be ---

17 MR. YIN: Well, isn't it in the procedure that  
18 you torque test it?

19 MR. O'NEILL: We used to set them where you  
20 drive it in the hole and then you would torque it up and  
21 make sure that you got three to five turns of your nut on  
22 the bolt. The new revision in the EDS only requires that  
23 that bolt be driven down into the hole and that it be  
24 torqued to the torque that is specified on the drawing.  
25 That is the torque test right there.

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1 MR. O'NEILL: We don't test torque anything.  
2 We drive the bolt in the wall and we torque it to whatever  
3 is specified on the process sheet.

4 MR. YIN: Who torques it then? Does the QC  
5 torque it?

6 MR. O'NEILL: No, the fitter torques it, and  
7 that is another thing that I am glad you brought that up.  
8 We have got a situation out there on thru-bolts where  
9 every time you put a thru bolt in there is no procedure  
10 for thru-bolts and there is no requirements that tell you  
11 how to inspect those holes or what you are looking for or  
12 anything on that. They torque them a different way every  
13 time they put them in.

14 I have seen three different ways that torquing  
15 has been done on thru-bolts out there. They have the AISC  
16 definition of snug tight, which is the normal effort of a  
17 normal man on a wrench which in structural connections may  
18 be fine, but they also use that to torque pipe flanges out  
19 there, too.

20 I don't know what kind of analysis they have  
21 done on that, but when you have a bolting process sheet  
22 and right there in your specification it says you torque  
23 with calibrated torque wrenches, they come out with a  
24 sheet that says torque this fitter tight.

25 MR. YIN: Before you go further here, I am not



1 X-ray on that line.

2 MR. YIN: What kind of bolt is that? Do you have  
3 a duct on the other side or how does it work?

4 MR. O'NEILL: They have used double nutted studs  
5 or they used bolts. You know, to me when you put a bolt on  
6 a drawing that means you have got a hex head on it and you  
7 have got a shank and you have got a threaded portion down  
8 here.

9 MR. YIN: Well, wait a minute. Your thru-bolt,  
10 one side is a stud and you have got a bolt head.

11 MR. O'NEILL: Right.

12 MR. YIN: Then you go through it and you have a  
13 double nut on the other side.

14 MR. O'NEILL: One nut.

15 MR. YIN: One nut, all right. To me that is a  
16 sure thing, right?

17 MR. O'NEILL: It is a sure thing, but you don't  
18 have any procedures that cover the use of it, where it  
19 should be used. Thru-bolting out there is kind of used as,  
20 you know, like I say, that is where I got involved with it  
21 on this.

22 MR. YIN: Well, wait a minute. Let's think about  
23 this a little bit.

24 MR. O'NEILL: There is a thru-bolt situation.

25 (Documents handed.)

1 they put A-36 material, the same diameter. They made no  
2 difference for the increase in loads based on the weak  
3 material being substituted because there is no criteria.  
4 There is absolutely no guidance on how to design  
5 thru-bolts, what you are doing when you do a thru-bolt  
6 configuration or how to quick fix a change to a thru-bolt  
7 where you have to substitute weaker material.

8 They don't tell you that you should limit a  
9 thread engagement just down to the concrete. They don't  
10 tell you that you can thread the entire rod. If you used  
11 the entire rod, they don't tell you that the threads  
12 should be included in the shear. They don't cover those  
13 aspects of them and they are not typically within AISC  
14 because they are looked at as strange bolts. You need  
15 specific guidelines saying that those sections apply.

16 MR. O'NEILL: I have seen quick fixes where they  
17 write in there for information this is an AISC 7th Edition  
18 bearing connection and that is where they use the snug  
19 tight to tighten it.

20 Here is the quick fix that Charlie is talking  
21 about.

22 MR. SAFFELL: Is this on this support 2-47R?

23 MR. O'NEILL: 2-47R. It is TC No. 19592 where  
24 the change was to go to an inch and a quarter A325 bolt.

25 Well, I was personally involved with this

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1 It appears they were aware, but as I remember, they did  
2 not ---

3 MR. YIN: Well, it kinds of brings me up another  
4 concern. Is the designer really aware of the fact that it  
5 is only 10 inches thick on the slab?

6 MR. O'NEILL: The designer was probably not.

7 Here is the other TC that came along with this  
8 in work, TC 113002, where they accepted as is the A36  
9 installation.

10 Now what I did is when they came up with the  
11 A36, I said, okay, that is fine and I put a hold point on  
12 there for QC to verify installation of the permanent A325  
13 thru-bolts.

14 The field engineer in charge got that guy on  
15 there, Kemp Bell, to say that the A36 was all right and he  
16 lined out my hold point on the process. Per this TC now  
17 they have gone from A325 down to A36 of the same diameter  
18 and they have reduced a considerably amount of the sheer  
19 that that support can take.

20 MR. YIN: Well, you are talking about, like the  
21 one that we just looked at, that a one and a quarter inch  
22 bolt requires a 10 and a quarter inch penetration.

23 MR. O'NEILL: For a hilti quick bolt.

24 MR. YIN: For a hilti quick bolt. It seems to me  
25 that the bolts are really tremendous.

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1 contradicts another and you are not sure who wrote whose  
2 first.

3 MR. BOSNAK: I have a follow-up question and  
4 this is probably a fairly important point. With respect to  
5 the quick fix, when there is a problem and they write a  
6 quick fix for the problem, you say they tell the QC people  
7 to stay away, but sooner or later they will have to come  
8 in because we have seen those kinds of things where the  
9 quick fix may go back to or three times and you may have  
10 two or three changes, but sooner or later it has to go  
11 through their final process. Then we look for supposedly  
12 the DR and the DCN by Pullman.

13 Now how does that get in there or doesn't it  
14 get in there? Again, you are QCing the final change and  
15 how does that happen?

16 MR. O'NEILL: In a situation like this it is  
17 considered to be in work and it hasn't been even -- you  
18 haven't even gotten to the workmanship inspection here. So  
19 they have considered anything that is done on a TC before  
20 workmanship at the time this was done -- see, they revise  
21 the procedures so often, too, that you don't know what you  
22 are working with from week to week.

23 MR. BOSNAK: But after it gets done, then how  
24 does it get the TC?

25 MR. O'NEILL: Okay. If a TC were required after



1 you know, if you look through my inspection data, you will  
2 see many times that I have sent drawings back to  
3 Engineering for no reference to TC's on the approved for  
4 construction drawing.

5 The only time you look at that to make sure  
6 that that TC has been incorporated is at your final  
7 workmanship and now under our new system it is at the  
8 final inspection stage.

9 MR. SAFFELL: And what do you use in that final  
10 inspection stage and what does your package consist of? It  
11 consists of the TC's?

12 MR. O'NEILL: Well, yes, the TC's here. There  
13 was a big push there right in August in Unit 1, and I have  
14 got the memo on that somewhere here, that they changed  
15 procedures in midstream and said that from now on you  
16 don't inspect the approved for construction drawing  
17 against the as-built to make sure that those TC's have  
18 been brought forth. All you check now is the as-built  
19 drawing of what is on the wall. You don't look at the  
20 approved for construction drawing.

21 MR. SAFFELL: So let me make sure I understand  
22 what you have just said. So what you would inspect  
23 against, you would use the TC's and the as-built drawing?

24 MR. O'NEILL: Okay, I will break this package  
25 down for you. Usually the final package that you do your

1 site so we can verify it with some other people whether or  
2 not ---

3 MR. O'NEILL: The normal practice up until  
4 approximately a month ago was that you go out and you do a  
5 final workmanship inspection with the approved for  
6 construction drawing that the craft is working to. That is  
7 your QC documentation package. When you get done with that  
8 inspection, and unfortunately the one side didn't copy  
9 here, but you have got a field process sheet that you sign  
10 off specific items on that sheet and you leave two blanks  
11 blank and you leave the bottom signature blank.

12 MR. SAFFELL: Do you have TC's? So far you have  
13 told us under the old system you had approved for  
14 construction drawings and a field process sheet.

15 MR. O'NEILL: Your TC's are a part of your  
16 design drawing. Now any TC's that were generated are  
17 included in that approved for construction package and are  
18 considered a design drawing. In fact, that is the latest  
19 revision of the design drawing. That is your approved for  
20 construction and you do your final workmanship.

21 MR. SAFFELL: And does that get redlined?

22 MR. O'NEILL: Right. That drawing goes to  
23 as-built who takes and comes up with the as-built drawing,  
24 and they are supposed to list all the TC's on the front of  
25 this drawing so that they have got a history of what has

1 MR. O'NEILL: On-site QA, yes, and then if they  
2 accept it, it is an accepted package that is transferred  
3 to PG&E.

4 MR. SAFFELL: Okay. Now you said that was the  
5 system in place up until a month ago.

6 MR. O'NEILL: Right.

7 MR. SAFFELL: What changed?

8 MR. O'NEILL: Okay. They have put a whole lot  
9 more heat on the craft and the engineer to take care of  
10 all of the problems before it gets to the QC final stage.  
11 Now when we do the final inspections, we still do in  
12 process hold points, but once the workmanship is done the  
13 foreman has to take responsibility before he signs the  
14 sheet saying it is good and the engineer also inspects it.  
15 That is the way the procedure is written anyway and that  
16 is the way it is supposed to be done.

17 I will tell you the say it is done. The foreman  
18 sits at his desk and does his inspection and signs off the  
19 sheet. The engineer generally is not qualified to inspect  
20 welding or doesn't even, you know, most of them aren't  
21 aware of what quality welding looks like or code  
22 compliance welding.

23 MR. SAFFELL: Is the package the same?

24 MR. O'NEILL: The package is the same, yes. You  
25 have got the approved for construction. But then right

1 installation. In these cases you will then be required to  
2 research the package and get the proper authorization."  
3 And they list a TC right there as being proper  
4 authorization to accept deficient conditions.

5 Well, you have already got a procedure that  
6 tells you what to do with deficient conditions.

7 MR. SAFFELL: Okay. But what I hear you saying  
8 is that there has been, and I want to make sure I  
9 understand this correctly, that there has been in your  
10 eyes an improvement in the way that as-built  
11 configurations are inspected from a procedural standpoint,  
12 that is the fact that one person, one operation does it as  
13 opposed to ---

14 MR. O'NEILL: They now are more in line with  
15 their procedure.

16 MR. YIN: Well, this is interoffice  
17 correspondence, right?

18 MR. O'NEILL: Yes.

19 MR. YIN: Is this a substitute for a change  
20 procedure?

21 MR. O'NEILL: That is procedure right there.

22 MR. YIN: Well, that in itself is considered  
23 unacceptable.

24 MR. O'NEILL: I have brought that to their  
25 attention many times and it doesn't seem to do any good.



1 is saying in some periods he did and in some periods he  
2 didn't.

3 MR. SAFFELL: I missed that. I didn't hear him  
4 say that, because what I heard him say was that before and  
5 after the same steps were followed.

6 MR. STOKES: Except this memo says you don't  
7 have to look at the TC's.

8 MR. O'NEILL: Yes. See, this memo ---

9 MR. STOKES: So they had the package, but they  
10 didn't look at the package ---

11 MR. SAFFELL: All it says is the QC inspectors  
12 look at the package. It doesn't say that it is not going  
13 to get looked at, whether it be by engineering or by QA.

14 MR. STOKES: Well, pre-inspect may have looked  
15 at it, but they are not QC or QA.

16 MR. O'NEILL: But, see, it is the context or  
17 when this came out. This is when they were trying to get  
18 all these hangers green tagged for fuel load. It was a  
19 real hectic time right around then. They were bringing up  
20 inspectors and making visual inspectors out of guys that  
21 came out of NDE school in Minnesota with no previous  
22 qualifications. They would take a test, an open book test  
23 on ESD 223, pass a visual or a performance welding thing,  
24 and in case they had the test answers right there on the  
25 table for some of the other tests.

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1625 I STREET, N.W. - SUITE 1004

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1 the previous procedure, which had QC reviewing these  
2 as-built drawings comprehensively, was yanked, and it was  
3 yanked for a month and a half and then they went back to  
4 it. What happened during that month and a half? Had they  
5 been preparing a program where new personnel were trained  
6 to come in and adopt that new function? We don't know.

7 MR. SAFFELL: Well, I think Tim said he did  
8 know. He said that there were a number of rejects coming  
9 back from QA which says that somebody was in fact doing  
10 that very thing.

11 MR. DEVINE: Somebody was doing some work.

12 MR. SAFFELL: If the rejects were coming back,  
13 and I am not going to hypothesize or why they went back to  
14 the original procedure, but it does say because there were  
15 rejects that somebody was performing that function and  
16 that the rejects were coming at a later point in time,  
17 this is what it says to me, rather than the earlier point  
18 in time.

19 MR. O'NEILL: Well, I think the most important  
20 point that this memo makes is that QC when they see  
21 obviously discrepant conditions they are now supposed to  
22 research the package and get a TC to accept that condition  
23 which is a violation of your procedure right there.

24 MR. SAFFELL: Where does it say that?

25 MR. O'NEILL: Down there at the bottom of the

1 DR-4730 in Unit 2 and DR-4678 in Unit 1, generic DR's,  
2 were written to document existing unacceptable weld  
3 conditions in supports. This form was what you would use  
4 to document those conditions on.

5 (Document handed.)

6 Now I am not sure how it worked. From the time  
7 of this memo, April 7th, which is entitled "The Temporary  
8 Policy Change For Pipe Support Pre-Inspection," okay, that  
9 temporary policy change and in the ESD's as well shows  
10 that there is no written procedure for pipe support  
11 pre-inspection.

12 When you are looking for deficient welds, I  
13 would think you are engaging in quality related functions  
14 that should come under the realm of Appendix B and require  
15 written procedures.

16 MR. YIN: Well, let me go back to what I have  
17 said previously. Unit 1, we know the QA program has got a  
18 lot of holes in it and we knew that. There is really no  
19 need to beat a dead horse. Is there anything that  
20 continues to carry on, things as usual, for Unit 2, the  
21 work that is presently going on? I think that is  
22 important.

23 MR. O'NEILL: The present pre-inspect program  
24 out there right now, they have taken away all welding  
25 inspection. You know, it is kind of hard to just tell you

1 MR. YIN: Before we jump into any other  
2 subjects, I would like to make a request to the staff to  
3 really take a look at the hanger, 2-47R. This is part of  
4 the TC 1-9121.

5 MR. BOSNAK: That is diesel generator exhaust?

6 MR. O'NEILL: Another thing you might look at  
7 when you go out and look at that hanger ---

8 MR. YIN: TC 1-9121.

9 MR. BOSNAK: That one I didn't get. Okay.

10 MR. YIN: And also TC 1-13002.

11 MR. BOSNAK: I have got that one.

12 MR. YIN: Now my concern in this particular area  
13 involves, first of all, the floor slab was damaged. In one  
14 case they specify a one a quarter inch hilti quick bolt  
15 with a 10 and a half inch minimum embed. So obviously you  
16 cannot achieve that. So it is changed to a thru-bolt  
17 configuration.

18 In other incidents for the same support, the 10  
19 and a half inch minimum embed was changed to embedment for  
20 nine inch, and this is okay by San Francisco. I am not too  
21 sure technically this is acceptable because this is a  
22 considered a large bolt in an almost through-wall  
23 configuration. That particular configuration, I am not  
24 aware that they have ever tested to that situation.

25 MR. SAFFELL: You mean that high a percentage of



1 MR. YIN: yes. For all practical purposes it is  
2 like through the wall already because it is such a sort  
3 distance. The concrete is already cracked and sometimes  
4 you have to through it a little bit before you can set it.  
5 So for all practical purposes the drilling is through  
6 wall, but the bolt is not. So I think the staff should  
7 take a look at that.

8 MR. DEVINE: Isa, that leads into one of the  
9 affidavits that I brought tonight. It was from an  
10 anonymous witness and concerned a problem with hilti bolts  
11 that were 10 and a half inches that were in 12-inch walls  
12 and a second problem with hilti bolts that were embedded  
13 from opposite sides of the same wall and very close to  
14 each other.

15 In each case the witness reported that there  
16 had been cones popping out of the concrete and they were  
17 repaired with dry packing.

18 MR. O'NEILL: I am familiar with that. That was  
19 on the back side of the wall.

20 MR. YIN: I would imagine it should be popped  
21 out because it is such a short distance.

22 MR. DEVINE: The upshot of this is that these  
23 problems were recorded on TC's, on quick fix sheets. The  
24 whistle blower followed these through to the relevant  
25 as-built drawings and there wasn't any reference to what

1 imagine the majority of the cases, if you had the proper  
2 as-built, you would do the as-built evaluation and you can  
3 assure yourself that the thing will work or not, right?

4 MR. DEVINE: If the as-built tells you the  
5 information you need to make that evaluation.

6 MR. YIN: Well, that has been QC accepted.

7 MR. DEVINE: This is his DCN.

8 MR. O'NEILL: You have got as-built tolerances.  
9 There are as-built tolerances on a lot of things like  
10 member length changes. You can change a member length plus  
11 three inches, minus 12 inches and still be within your  
12 requirements.

13 MR. YIN: Well, that is all right because it is  
14 already engineered to accept it the way it is.

15 MR. STOKES: I would like to make a point on  
16 this engineering bit about the bolts. When I was in the  
17 design group on the pipe supports, we did not have any  
18 information on concrete wall, slab or any other  
19 thicknesses in the plant. We assumed the slab was thick  
20 enough for whatever bolt we wished to put in the wall or  
21 slab. That is why these problems happened with 10 and a  
22 half and a 10-inch wall.

23 When I was in quick fix and the 12-inch wall  
24 got punched out and there is a TC written by me on it, I  
25 put thru-bolts in it after researching the intake drawings

1 I am not sure what the exact figures are.

2 MR. STOKES: In relation to your question, at  
3 Gaithersburg we checked penetrations where pipes came in  
4 and turned all down three side walls and all the supports  
5 were on one wall. We had a two-foot wall and all the  
6 supports were on that one wall. When they did the stress  
7 counts for the wall, they needed steel plate a half inch  
8 on both sides of the wall to take the load sandwiched  
9 because the wall was overloaded.

10 At Diablo Canyon a lot of the walls are not two  
11 foot. Many are 18 inches, 10 inches, 12 inches. Those same  
12 counts, to my knowledge, have never been performed on  
13 those structures.

14 MR. YIN: Right. While I was listening to you, I  
15 was also thinking. Furthermore, I think the staff should  
16 also review the cumulative effect on the wall because it  
17 bothers me when you have such big loads and perhaps you  
18 have more than one support on the same wall, such thin  
19 wall, that the cumulative loading on the wall may be  
20 a problem, too.

21 MR. O'NEILL: Or on the sealing two sides of the  
22 wall.

23 MR. YIN: So let me summarize the three areas I  
24 would wish the staff to take a look at. The ratio of the  
25 bolt, the embedment length and the wall thickness appears

1 MR. KNIGHT: Let me ask just one other thing.  
2 This inch and a quarter bolt we are talking about, do you  
3 know offhand what the actual function of the line is?

4 MR. O'NEILL: It is the exhaust stack for the  
5 diesel generator.

6 MR. KNIGHT: So we have an inch and a quarter  
7 bolt on the exhaust line of the diesel generator?

8 MR. O'NEILL: It is the base place or one of the  
9 supports stacked up. These lines go all the way up to the  
10 top of the turbine building. They are big, heavy steel  
11 lines.

12 MR. STOKES: Those lines grow in the  
13 neighborhood of six inches at the roof, and I am aware  
14 that at one time they had ignored the fact they grew so  
15 much and they actually punched through the roof material  
16 of the turbine building because normally they were  
17 considered that growth. It came from the engineers who  
18 were working on redesign of those supports for that line.

19 They are very heavily loaded and they are off  
20 the side of the turbine building sufficiently that  
21 structurally they are very hard to support. They in effect  
22 had to build frames low down and further up the side of  
23 the building they actually put extra beams in the turbine  
24 building to get steel to support the pipe off of  
25 sufficiently. The loads are quite substantial on that

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1 thick and they had in the neighborhood of 16 nilti bolts  
2 on some of the original designs of inch and a quarter and  
3 10 and a half inches deep. That says there is a lot of  
4 load there. They are boxed in between the walls even. So  
5 to move it they would have to knock out a wall, but they  
6 are very heavily loaded.

7 MR. YIN: As far as the programmatic, the QA  
8 procedure type, unless you have any new information, we  
9 more or less summarized that there are some problems  
10 involved and we have caused them to change quite a bit of  
11 the procedures and so on.

12 MR. DEVINE: Isa, I would question that. I  
13 would challenge how much things have changed.

14 MR. YIN: Well, right. If you can show me that  
15 they haven't really done it, then we will be very much  
16 intrested to see why the corrective action has not been  
17 embraced. For instance, you mentioned the training is  
18 still kind of unacceptable and they still throw you a  
19 bunch of paper and you have to read it and ---

20 MR. O'NEILL: They feel it is acceptable, you  
21 know. I don't.

22 MR. YIN: For those areas bear in mind two  
23 things. Be specific and, secondly, anything new or if  
24 anything is the same old habit and still exists ---

25 MR. DEVINE: I would like to read you from a

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1 MR. YIN: It is not design change notices. It is  
2 actually a non-conformance report.

3 MR. DeVINE: This is a minor league  
4 non-conformance report.

5 MR. YIN: Okay.

6 MR. STOKES: In house so to speak.

7 MR. DEVINE: The inspector had written it by  
8 saying I want to know if there have been calculations on  
9 this and have the side effects of this deep embedment been  
10 considered.

11 A May 21st memo from Mr. Karner, the QA Manager  
12 resolves this by saying "Since this DCN addresses only  
13 questions or concerns, a discrepancy report has not been  
14 generated. Receipt of this letter will serve as the method  
15 for Pullman Power Projects to close the deficient  
16 condition notice."

17 No one has been back to this guy. He has been  
18 working on this now I guess for about a year in a series  
19 of DCN's. Nothing has happened. This is as of yesterday  
20 for Unit 1 bolting.

21 That is part of the reason why we don't share  
22 the confidence that the corrective action is being  
23 implemented and that they have learned their lesson that  
24 it is new world out there.

25 I am just not getting those reports from the

1 hang green tags and that we want production out of you?  
2 Can you give names and quotes and citations? Do not refer  
3 to "they" because they cannot be traced. You have to be  
4 very, very specific.

5 MR. O'NEILL: I could come up with specifics on  
6 that, yes. That is the general attitude in the QC  
7 Department.

8 MR. SCHIERLING: But with general attitude that  
9 is very hard to trace. We realize that you being out there  
10 and being at the plant day in and day out, that you are  
11 close to what is going on. We do not see that and the only  
12 way we truly can go and follow up on that is by not  
13 looking at general statements. That is very, very hard to  
14 do.

15 MR. DEVINE: Mr. Schierling, it is very well  
16 taken and he has answered yes, and we will work on it.

17 MR. O'NEILL: I am not prepared tonight to give  
18 you those names and statements, but give me a couple of  
19 days and I will have them.

20 MR. DEVINE: I would like to go one further even  
21 on this DCN on the hilti bolts. The anonymous witness told  
22 me that the first response to writing his DCN was to  
23 instruct him to change it from a DCN to a memo. I don't  
24 know how many weeks ago that was because I don't know when  
25 the things was authored. But that doesn't strike me as an

1 working on these issues.

2 I think that is why we are starting to spill  
3 over a little bit past our boundaries, and your point is  
4 also well taken. We came prepared to talk about design  
5 issues.

6 I think one of the most unfortunate things  
7 about quick fix is that it covers both QC and design  
8 issues that are normally handled in separate worlds. It  
9 has almost been a merger of what are usually separate  
10 disciplines and that is why some of this stuff comes up in  
11 them.

12 MR. YIN: Well, if you do not consider Region  
13 V's attitude and response is adequate, there are certainly  
14 channels that you can raise the concern with.

15 MR. DEVINE: I am sorry?

16 MR. YIN: There are channels, and you may know  
17 better than I do, that you can ---

18 MR. DEVINE: We have made requests for all those  
19 channels.

20 MR. YIN: Right, but still we cannot completely  
21 write them out of the picture. You know, we still legally  
22 within the bounds of our responsibility.

23 MR. DEVINE: I understand that.

24 MR. VOLLMER: You have applied, but have you  
25 written something specific saying that Region V did not



1 top there depicting the actual condition of the way that U  
2 bolt is installed. You will notice you have got a nut  
3 hitting into a weld and you have got it also bearing on  
4 half of the shim plate that the weld is drilled to.

5 Now that is shown on the as-built drawing, but  
6 it isn't shown in the detail that is shown right there.

7 MR. YIN: I see. So what you are saying is the  
8 fact that in some cases the as-built drawing does not  
9 reflect the actual installation conditions. Is that the  
10 issue?

11 MR. O'NEILL: Not all the details. You can check  
12 that for yourself. Let me show you the as-built on this.

13 MR. STOKES: They are not as detailed.

14 MR. SAFFELL: That is Unit 1?

15 MR. O'NEILL: That is Unit 1 diesel fuel oil  
16 system. That is your as-built view of that situation.

17 MR. YIN: I see.

18 MR. O'NEILL: If I had been adamant about him  
19 putting that on there, that wouldn't even be shown on that  
20 TC.

21 MR. YIN: Well, I think the staff should look  
22 into this one.

23 (Document handed.)

24 MR. YIN: Now again, is this some kind of an  
25 isolated case, or it is really like five out of ten. Are

1 logidity?

2 MR. STOKES: They analyze it as a full plate  
3 typically. They analyze it as it is a complete plate  
4 typically.

5 MR. YIN: Even with partial ---

6 MR. STOKES: Even with partial pen welds. They  
7 have no method in the base plate program to distinguish  
8 that there is a line across it where the section module is  
9 affected. So it is strictly modeled as one continuous  
10 plate and it may not function as one continuous plate.  
11 Even using ANSI you had a problem modeling that because  
12 you had a limitation on how wide a segment you could have  
13 there to represent that section before you had a modeling  
14 configuration problem. Even ANSI wouldn't model in a weld  
15 on a plate as a weld. You either had to make it wider than  
16 it was, or you couldn't make it just a line.

17 MR. YIN: Well, how many situations are like  
18 that, because that is certainly worthwhile to look into?

19 MR. O'NEILL: There are two that I know of right  
20 there.

21 MR. YIN: A full penetration weld or partial?

22 MR. O'NEILL: That is regularly done. I have  
23 seen plate that is shown. This is on the RHR Unit 2  
24 containment sump recirc line to the RHR pump where there  
25 are two base plates with the support members attached to

1 has been leveling nuts. You put your nuts on and level the  
2 plate. You use shim blocks thinner than the height of the  
3 plate raises to on the nuts and you pressure grout it so  
4 that it actually forces it up against the nuts off the  
5 shim blocks and it is on the grout.

6 At Diablo Canyon they torque the bolts down on  
7 those shims and then grout it and the grout literally  
8 doesn't take any load. The steel is much stronger than the  
9 grout.

10 MR. O'NEILL: That is your as installed use.

11 MR. YIN: Well, the positioned nuts is always  
12 there and sometimes they use little studs, and that is  
13 very common. But you are talking about actually bolting it  
14 down?

15 MR. O'NEILL: That is torqued down right onto  
16 this plate.

17 MR. YIN: Then you don't really need the  
18 grouting. The grout is really something extra.

19 MR. O'NEILL: That is to keep the water out.

20 MR. STOKES: Well, they had to put the grout in  
21 it because if you did an analysis on those old shim blocks  
22 you will find that you are exceeding your bearing capacity  
23 stresses on the concrete from the shim blocks. So they put  
24 the grout in it so you don't ever see those shim blocks  
25 and you see your analysis based on your bearing stresses

1 right? There is almost no failure of bolts from  
2 compression.

3 MR. STOKES: The other thing about these shim  
4 blocks, they are considered in the implication of the  
5 compression loads on the cone of the anchor bolts. In  
6 other words, if you have a hell of a load coming down here  
7 and then you have a cone here, I contend they have never  
8 analyzed that system as to what it does. If they look at  
9 the concrete here they would have an overlap that is  
10 complete.

11 MR. YIN: Well, the loading cannot be  
12 simultaneous. See, if you pull this thing up like this  
13 over here, then this load does not exist because it  
14 relieves itself.

15 MR. STOKES: If you torque the nuts down, you  
16 combine a tension load on the bolt with a bearing stress  
17 to the concrete from the shim block.

18 MR. YIN: If this thing really happens it should  
19 show. This is already cracked and the bearing is lost and  
20 the grout is loose. So the fact is if you can torque this  
21 load to achieve the proper torquing, you know the  
22 counteracting is not really a problem.

23 MR. STOKES: I guess my problem, Isa, is the  
24 same problem you have with us. If I was more familiar with  
25 all of the transmitted information between you and PG&E on



1 GAP?

2 MR. STOKES: NO.

3 MR. SCHIERLING: Send a copy of what?

4 MR. YIN: The procedures and all that stuff.

5 MR. SCHIERLING: Of everything that the staff  
6 receives, copies go to the Public Document Room, and  
7 everything that we receive from PG&E unless it is  
8 proprietary information is being placed in the Public  
9 Document Room, everything.

10 MR. DEVINE: Mr. Schierling that was the  
11 question at the beginning of the meeting, that there is I  
12 guess a notation in the transcript that says that certain  
13 more voluminous materials will have to be requested and  
14 that is why we were making the request, and with that  
15 qualifier of course you are right.

16 MR. STOKES: Well, at the last meeting you  
17 specifically discussed a new document, I-55, a new  
18 procedure, M-9 was discussed and ESD-223. I have a copy of  
19 what was the current edition of ESD-223. It has been  
20 increased roughly a third from when I was terminated at  
21 Diablo. Changes in that would be very relevant to any of  
22 the issues.

23 MR. YIN: Those procedures, you must recognize  
24 there are also commercial values, too. Many companies  
25 spend a lot of time to develop the procedure and they hate

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1 my office or the NRC office or anywhere, that is no  
2 problem. We can fix that to your convenience. But it is  
3 important that you specifically request what procedure  
4 that you want. If you don't remember those numbers and so  
5 on, try your best to identify as close as possible what  
6 type of procedure you want to review and what area and  
7 we will try to get hold of a copy.

8 MR. SCHIERLING: We will think about that. I  
9 think we have to go and talk about that first.

10 MR. STOKES: Well, I am perfectly willing to  
11 sign a confidentiality statement that I won't copy it or  
12 use it.

13 MR. SCHIERLING: That will not do. We have to go  
14 and discuss it with our counsel.

15 MR. DEVINE: The other thing that is along those  
16 lines that we have agreed to with the Office of  
17 Investigations is that for certain documentation that they  
18 are not at liberty to disclose, that it could be reviewed  
19 under their supervision and that would be done, as you  
20 say, at the office or at the hotel room where they are  
21 working out of at the time. So that a copy would be  
22 reviewed but not transmitted and that whatever analytical  
23 challenges the whistleblowers wanted to make to points in  
24 that document, they could make on the spot. That might be  
25 more pragmatic for you.

1 right there.

2 MR. SAFFELL: Okay. This TC was an attempt by  
3 one person to address a situation which you wanted  
4 clarified here; is that correct?

5 MR. O'NEILL: Yes.

6 MR. SAFFELL: They are not two different things.

7 MR. O'NEILL: No.

8 MR. SAFFELL: Okay.

9 MR. O'NEILL: The design doesn't show it like  
10 that, and when you put shims on something, if they are  
11 less than a half inch thick per the procedure, you don't  
12 have to as-build them. That is why they are not shown on  
13 the as-built.

14 MR. YIN: Isn't that condition really a  
15 non-conformance condition?

16 MR. O'NEILL: I don't know myself.

17 MR. YIN: Well, I don't think that any design  
18 was originally designed that way.

19 MR. O'NEILL: I don't either, but now that it is  
20 on this quick fix here, it is the design drawing and I  
21 can't ---

22 MR. STOKES: I can answer that question. The  
23 shim blocks should have been welded on the ends opposite  
24 the U bolt installation and the nuts should not have been  
25 placed on the welds because the welds shouldn't have been

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1 can an acceptable bolt pattern on there.

2 They have come up with fish plates for the  
3 holes that are oversized, but the problem is now the fish  
4 plates are out of the ASD tolerances. A fish plate is a  
5 plate that you put over a oversized hole to make it the  
6 right size hole.

7 MR. YIN: All the little details, I am not  
8 really concerned about, but the one particular item, the  
9 wing plate, I am going to make a request to the staff to  
10 look into it. How can you analyze the base plate, you  
11 know, where there are incomplete penetration welds and  
12 concede that it is a full plate and how are you going to  
13 check the piling effect and how are you going to check the  
14 rigidity effect of the base plate and so forth?

15 Are there many situations like that?

16 MR. O'NEILL: Yes. I have seen that I can see  
17 right now, I worked on one the other day. It is kind of  
18 interesting. The plate that they were using wasn't a  
19 standard thickness of plate.

20 MR. YIN: Let me ask also one thing. When you  
21 are welding those wing plates, was that removed from the  
22 wall or do they just weld right on it?

23 MR. O'NEILL: Sometimes you weld right onto it.

24 MR. YIN: Don't you worry about burning up the  
25 concrete?



1 as meeting that criteria, I serious doubt.

2 It is not addressed by the criteria and it is  
3 done quite frequently. They will have a procedure for  
4 removing nilti quicks that don't torque or they won't move  
5 for some reason, and because they don't have it, they  
6 typically cut it off and leave it at the place.

7 MR. KNIGHT: May I ask what if your opinion  
8 would be the purpose of the dry packing or filling the  
9 hole?

10 MR. STOKES: To provide a means for transfer of  
11 the compression stresses in the concrete which you  
12 typically analysis for as a cone failure. Dry pack would  
13 be assumed as being the same medium as the concrete. A  
14 shell, if it is steel, is a means of transferring the  
15 compressive stresses in the concrete around the shell. A  
16 nilti quick because of the voids everywhere, except where  
17 those little expansion clips exist, is not going to  
18 transfer any load because it is void around it. You have  
19 to have failure of the concrete before it will compact  
20 enough to transfer loads to the next concrete. They are  
21 not the same.

22 MR. KNIGHT: These areas, these are abandoned  
23 holes?

24 MR. STOKES: Yes, like we were pointing out a  
25 while ago, all the drilled holes.

1 MR. KNIGHT: I would offer that in a number of  
2 cases there is no structural significance to even a fairly  
3 large number of holes, but what you do want to do is plug  
4 the hole so that you don't have a place to pick up dirt  
5 should contamination become a problem.

6 MR. O'NEILL: Well, if you have that hilti quick  
7 bolt now in there and it has never been set ---

8 MR. YIN: Wait a minute. We are talking about  
9 several things now.

10 MR. DEVINE: I think to get back to his  
11 question, if there were a significant number of cases  
12 where the bolt was left in the hole and just cut off ---

13 MR. YIN: Right. We also have to consider the  
14 definition problem. When you talk about shell type, are we  
15 talking about that a real shell, I mean a one-inch  
16 chick ---

17 MR. STOKES: I don't talk about shell. I talk  
18 about a slug being placed in a hole with an expansion  
19 round thing being driven into it adverse from an insert  
20 with a sleeve on it like hilti quicks, the little sleeves,  
21 the sliding sleeves. I consider that a stud and not a  
22 shell.

23 MR. YIN: It is pounded and then expands in the  
24 air. That is the kind we are talking about?

25 MR. STOKES: As shells.

1 MR. BOSNAK: --- or maintaining the edge  
2 distance, then it would be perfectly all right.

3 MR. O'NEILL: No, you are not maintaining either  
4 of those. You are not maintaining either of those. The  
5 case I came up on, they had a base plate where the anchors  
6 were installed. These holes were drilled by the layout  
7 crew and it was on a ledge. There was a concrete ledge  
8 here, something like this. They put these anchors in and  
9 then they realized that their base plate wouldn't fit  
10 there and it hit the wall.

11 So what they did was they cut these anchor off  
12 flush with the wall and moved the other anchors, in fact  
13 they did this with all four of them, to where there was  
14 like about half an inch of concrete edge to edge on the  
15 two anchors. This became your good anchor.

16 I asked the engineer in charge if this was an  
17 acceptable procedure because I said that anchor by the  
18 definition of the spec should be expanded. I feel that  
19 anchor is not expanded unless it is torqued and those  
20 clips are brought up into the concrete.

21 Charlie tells me that is not an expansion in  
22 the term of the word expansion anchor, but they call them  
23 those cut there.

24 My concern is like you say, this would act as  
25 an edge for this anchor that is the good anchor. I asked

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1 if the same thing occurs, and I am saying if because the  
2 TC's were not looked at to see if they existed in  
3 conjunction could cause a problem. They may torque  
4 initially because I haven't looked at the torque  
5 requirements, but they may not be there 10 years down the  
6 road after it has been loaded to do the several changes in  
7 the systems, up and down, hot and cold, from loading the  
8 fuel.

9 Those situations, you know, if they had a  
10 program where every five years they went in and rechecked  
11 all the bolts to see if there has been a change in what is  
12 there, I would feel a lot more comfortable.

13 MR. SCHIERLING: Can we go off the record for  
14 just a second.

15 (Discussion off the record.)

16 (Recess while the parties caucus.)

17 MR. SCHIERLING: We will go back on the record.  
18 We caucused briefly and have come to the  
19 following conclusion which is hopefully acceptable to you.  
20 I think the evening is late and we would like to close the  
21 meeting out at this time.

22 From the past discussion it appears to us that  
23 most, if not all, of your concerns that you still have  
24 fall into the area of quality control and we believe it is  
25 appropriate to rethink our approach to that aspect.



1 be helpful in whatever agenda you wish to prepare to  
2 identify those things that will deal with Unit 1 and those  
3 things that will deal with Unit 2.

4 As Hans indicated, we would like to get a  
5 different group together to address the issues. That will  
6 include I think some of the people here tonight in case  
7 some of these have design implications or there are  
8 issues specifically dealing with design interface. But for  
9 us to be involved and try to deal with some of the issues  
10 we have talked about tonight, you just are not really  
11 talking to the right people and we need to take steps  
12 internally to assure that you talk to the right people and  
13 these are handled in the appropriate way.

14 Again, your offer to write down specifics will  
15 be very helpful to us, Tom, and as soon as that is  
16 possible we would welcome that. I know it is quite a job.

17 MR. DEVINE: We would be pleased to take it on.

18 I have a few questions.

19 One is what is the time frame that we are  
20 talking about so we can plan our own work?

21 MR. SCHIERLING: A follow up on this meeting?

22 MR. DEVINE: Yes, sir. I realize you are  
23 estimating.

24 MR. SCHIERLING: Yes. Probably in two weeks.

25 MR. DEVINE: The second question I had is one

1 will provide it to you promptly. Whatever steps Region V  
2 and OI are taking to release that information to you, from  
3 my point of view, it will be one NRC policy and we will  
4 likewise make the transcript of this meeting available on  
5 the same basis. So I have to check with the people what  
6 they have in mind, and we want to be consistent in that  
7 regard.

8 MR. DEVINE: Okay. I sure respect that. I just  
9 to re-emphasize that we can do a better job if we are not  
10 working quite as blindly.

11 MR. SCHIERLING: Absolutely. On the same item,  
12 let me ask you if we were to make this transcript  
13 available to you, would you be able to go through the  
14 transcript and clean it up in quotation marks such that it  
15 could be released on Board notification? Would you be able  
16 to do that?

17 MR. DEVINE: Yes, sir. In fact, I have made that  
18 proposal before. Our concern, of course, is  
19 confidentiality slip-ups, and we would take on that  
20 responsibility.

21 MR. SCHIERLING: Okay. So why don't you give me  
22 a call early next week and I will let you know where we  
23 are standing.

24 MR. DEVINE: Sure. The third question I have is  
25 one that was a late breaking developing that led to this

1 MR. BOSNAK: we are in San Francisco.

2 MR. DEVINE: We will be going back down to San  
3 Luis Obispo tonight or so.

4 MR. SCHIERLING: And this is the only copy you  
5 have?

6 MR. DEVINE: Yes, sir. That was the reason for  
7 my question.

8 MR. BOSNAK: We took notes on what you said, but  
9 it is a lot better to have a copy.

10 MR. SCHIERLING: The only way I can see if that  
11 you can give it to us at the airport tomorrow morning when  
12 we arrive there or tomorrow night when we leave.

13 MR. DEVINE: When are you arriving and leaving?

14 MR. SCHIERLING: We arrive at 8:40 and I am  
15 currently scheduled to leave at around 7 o'clock again  
16 tomorrow night.

17 MR. DEVINE: I think we had better shoot for  
18 that one, Mr. Schierling, since I am not sure the services  
19 will be open by the time you arrive.

20 MR. SCHIERLING: Okay.

21 MR. DEVINE: The fourth question that I have on  
22 my list here is connected with that. The witness gave me  
23 enough information to write up this summary, but as he  
24 called up to follow through on it, I of course was pushing  
25 to see if we could make the record more complete. He

1 MR. KNIGHT: It seems to me that in order to  
2 keep what is a very multitaceted review going here with  
3 any sort of order, I would like to say that Hans as the  
4 Project Manager will be the point of contact.

5 MR. VOLLMER: These are again Unit 1 issues,  
6 Tom?

7 MR. DEVINE: This is for one particular issue.  
8 It is the bolting issue that is alluded to in more  
9 generalized fashion in my statement. It is the evidence  
10 behind it.

11 MR. VOLLMER: We are certainly interested in all  
12 issues, but clearly our charter right now and what we are  
13 trying to accomplish deals at this point in time with  
14 Unit 1 and the particular makeup of the crew.

15 MR. DEVINE: These are Unit 1 issues.

16 MR. VOLLMER: So if you can get Hans the  
17 documents, we can get the correct people to get involved  
18 in it.

19 MR. SAFFELL: And are they issues that are  
20 similar to the ones we have discussed tonight?

21 MR. DEVINE: Yes, I introduced these issues this  
22 evening. This was Tim's meeting, but there was one point  
23 that I wanted to share with you since I raised it. I have  
24 summarized it in writing, and while the documents aren't  
25 available for me, they are available for you and I want to



1 have got eight NRC representatives here who are quite  
2 responsible officials who have apparently come to some  
3 contrary conclusion.

4 For me to be able to summon two witnesses who  
5 are very nervous about talking to the NRC I have to be  
6 able to convince them that the representatives they are  
7 dealing with are interested in following through on these  
8 issues.

9 If it is the same people who came down from  
10 Region V the first time, Mr. Kirsch and Mr. Hernandez,  
11 they have already demonstrated that they are not  
12 interested in pursuing those issues.

13 We went through an exercise in April where the  
14 Commission directed Region V to return to some issues they  
15 weren't interested in and it was a complete waste of time  
16 and it left the witnesses very embittered about the  
17 process of working within this regulatory system.

18 I am requesting very strongly that there be  
19 technical people assigned to this who haven't already  
20 rejected the relevance of these issues. We think that  
21 their significance is becoming moot at this point, but we  
22 have to have an open mind in the forum that we raise them.

23 MR. VOLLMER: Let me ask one thing. Are you  
24 saying that the issues are not being considered by the  
25 Region? Have they been closed out in some way or have you

1 from the paper or there is anything that is not clear from  
2 the paper, it is not going to become clear or be part of  
3 the record and we view these statements as a starting  
4 point to work from rather than as the entirety of what we  
5 have to share with you all.

6 MR. VOLLMER: Okay. And that was precisely the  
7 reason for my question since it is not possible yet to  
8 tell how significant the we think the issues are until we  
9 see the documentation and pursue it further.

10 MR. DEVINE: But at least you are asking us for  
11 more and there is a follow through process here. We  
12 started and stopped in one evening in January on this  
13 issue with quick fix and it was discussed in detail then.

14 MR. VOLLMER: Jim?

15 MR. KNIGHT: (Nodding negatively.)

16 MR. VOLLMER: Anybody else?

17 (No response.)

18 MR. SCHIERLING: I think that is it.

19 Well, thank you very much for coming.

20 MR. DEVINE: Thank you all for your kindness.

21 (Whereupon, at 10:31 p.m., the closed meeting  
22 concluded.)

23 - - -  
24  
25

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the  
NRC COMMISSION

In the matter of: Confidential Meeting

Date of Proceeding: Tuesday, May 22, 1984

Place of Proceeding: San Francisco, CA

were held as herein appears, and that this is the original  
transcript for the file of the Commission.

Mary C. Simons

Official Reporter - Typed

*Mary C. Simons*

Official Reporter - Signature