UNITED STATES

NUCLEAR REGULATORY COMMISSION

OFFICE OF INVESTIGATIONS FIELD OFFICE, REGION V

1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

November 26, 1984

MEMORANDUM FOR: Diablo Canyon Miscellaneous File (FAC 1)

FROM: Ronald A. Meeks, Senior Investigator
Office of Investigations Field Office, Region V

SUBJECT: GAP PETITION DATED JUNE 21, 1984 CONTAINING APPROXIMATELY 300 ALLEGATIONS ON DIABLO CANYON

REFERENCE: Memo from Ronald A. Meeks to Diablo Canyon Miscellaneous File (FAC 1) dated September 12, 1984, same subject

As referenced above, Copy 2 of the subject petition, including 18 attachments, was returned by Gonzalo HERNANDEZ, Region V, and maintained in OI:RV.

As a matter of record it is being noted that on this date, this copy is being forwarded to Han SCHIERLING, NRR.

cc: Han Schierling, NRR

6-10

June 12, 1984

MEMORANDUM TO: D. G. Eisenhut, Director, Division of Licensing

FROM: T. W. Bishop, Director, Division of Safety and Projects
Region V

SUBJECT: SAFETY RELATED BOLTING AT DIABLO CANYON UNIT 1 - REQUEST FOR TRANSFER OF LEAD RESPONSIBILITY - DOCKET NO. 50-275

Based on the results of a Region V Special Inspection during the weeks of May 14-25, 1984 and information received on June 11, 1984 in the Region V Office (PG&E Letter No.: DCL-84-220), on safety related bolting problems at Diablo Canyon, Unit 1, the Region requests that NRR assume lead responsibility for the evaluation and resolution of the enclosed information. Because of the possibility of a near term Commission decision on a full power license for Diablo Canyon Unit 1, and because of the potential significance of this issue, the Region suggests that immediate action be taken.

As per a telephone discussion with Mr. J. Knight at 11:00 a.m. PST on June 11, 1984, you will find, enclosed, support information obtained from our onsite inspectors. Allegations 351, 861, 862, 864, 871, 873 and 885 are included in this package and are being specifically transmitted for your responsibility.

for T. W. Bishop, Director
Division of Reactor Safety and Projects
Region V

Enclosures: As stated

cc w/enclosures: G. Knighton, NRR
H. Schierling, NRR

partial

cc w/o enclosures: P. Johnson, RV
R. Pate, RV
D. Kirsch, RV

cc PTkuo / J. Knight
6/15/84

D/A

8612110179

G-6

Problem Statement

Allegation #(s): #351

ATS No.(s):

RN(s):

This document lists (or directly references) each allegation or concern brought to the attention of NRC personnel. The purpose of this statement sheet is to assure that all points raised by the alleger are covered.

If the problem statement is not clear as to who, what, where, when, or why regarding the issue, the commentary section will amplify the statement. The commentary section will also be used if there is apparent conflicting information or if there is no or very little original information available which describes the concern(s). (This can occur if, for example, a line concern was received in an interview).

Problem Statements (use extra sheets as necessary)

Allegation#	Verbatum Statement or Reference
#351	Slotted holes on rupture restraints not IAW ASTM A-325

Commentary This allegation was received on-site from an anonymous alleger by D. Kirsch and G. Fernandez

Date This Statement was Completed 4/17/84 RC Greger

Technical Reviewer Signature

476

Allegations
861
862
864
871
873

Jo: Place in DCAF
DE
If copy already in - make this copy 2.

DOCKETED
USNRC

'84 MAY -3 P12:44

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	
PACIFIC GAS AND ELECTRIC CO.	Docket No. 50-275 OL
(Diablo Canyon Nuclear Power Plant, Unit 1)	

DOCKETED
PROD. & UTIL. FAC. 50-275

2.206

PETITION PURSUANT TO
10 CFR 2.206

THOMAS M. DEVINE,
Legal Director

GOVERNMENT ACCOUNTABILITY PROJECT
INSTITUTE FOR POLICY STUDIES
1901 Q Street, N.W.
Washington, D.C. 20009
(202) 232-8550

DATED: May 3, 1984

(a) to determine through visual, destructive and non-destructive examination the scope and nature of deficiencies in the condition of Diablo Canyon resulting from alleged violations of requlatory or program quality assurance violations; and

(b) to determine the need for a comprehensive, third party reinspection program of all safety-related construction in Units 1 and 2, with full authority by the independent organization to identify and impose corrective action on any nonconforming condition that deviates from 10 CFR 50, Appendix B, the Final Safety Analysis Report ("FSAR") or plant specifications, through implementation of corrective action;

(5) development of a full factual record on Pacific Gas and Electric's ("PG&E") character and competence to operate the Diablo Canyon nuclear power plant, including

(a) a management audit by an independent organization, and

(b) publication of a report by the NRC Office of Investigations ("OI") after completion of its investigation to determine the causes of construction and design QA violations at Diablo Canyon, including issues such as harassment and retaliation, subordination of quality assurance to cost and scheduling concerns, destruction of records and false statements, and deliberate violations of the Atomic Energy Act, and

(c) review of the record compiled in any pending administrative hearings before the Department of Labor for alleged retaliatory personnel actions in violation of 42 USC 5851 at Diablo Canyon;

(6) Board Notification of transcripts of whistleblower interviews that began on April 3, 1984, until completion of all such interviews; 1/

(7) investigation by the Office of Inspector and Auditor ("OIA") to determine --

(a) whether there have been misleading or material false statements by the NRC staff to the Commission during the March 19, 26, 27 or April 13 briefings, or in Supplemental Safety Evaluation Reports SSER-21 (December 1983) or SSER-22 (March 1984), and

(b) the causes of the QA breakdown within the NRC staff responsible for Diablo Canyon

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1/ In order to facilitate manageable review of the voluminous transcripts, counsel will work with relevant witnesses to prepare summaries of issues raised and supported during the interviews.

The Mothers adopt and incorporate by reference all 519 allegations and documentation in earlier February 2, March 1, March 23 and April 12, 1984 petitions to the Commission. Those disclosure are relevant bases for this petition and have not yet been seriously reviewed, let alone resolved. This petition is further supported by NRC inspector Isa Yin's draft reports on Diablo Canyon. See Diablo Canyon Board Notification No. 84-071 (April 3, 1984). Third, this petition is supported by the transcripts of witness interviews since April 3 which the Commission has not yet released. Those transcripts include hundreds of specific, new allegations.

Finally, this petition is supported by the evidence summarized below. Since the Commission's April 13 decision to permit low-power testing, counsel has received six additional affidavits, including two from GAP investigation Richard Parks and other affidavits from four current and former employees at the plant. 3/

I. DESIGN QUALITY ASSURANCE BREAKDOWN

Although QA deficiencies for large- and small-bore piping are common in the nuclear industry, Diablo Canyon suffered a comprehensive QA breakdown in these areas. At the April 6, 1984, Advisory Committee on Reactor Safeguards ("ACRS") meeting, Inspector Yin put the violations in perspective. "What makes it uncommon with Diablo Canyon is that, first, all areas consist of deficiencies. . . " (Transcript of April 6, 1984 ACRS meeting, p.

3/ Two witnesses submitted affidavits on condition that that confidentiality would be protected through deletion of any identifying characteristics. In those cases uncensored versions of their statements will be provided to the NRC staff or the Office of Investigations.

To illustrate the scope of the problems, one of whistleblower Charles Stokes' allegations which Mr. Yin "fully substantiated" involved "thousands (more than thirty 2¼" bindersfull)" of unreliable "Quick Fix" design changes. (Board Notification 84-071, March 29, 1984 Yin draft, pp. 49,55). In light of the uncontrolled nature of the program, a sampling review by PG&E is unacceptable. Every "Quick Fix" must be examined by an objective reviewer. Every Quick Fix that is skipped or glossed over will represent a potentially dangerous question mark during commerical operations.

Finally, PG&E disqualified itself through misleading or material false statements to the Commission a week and a half prior to the April 13 licensing vote, on the same issues that were holding up the license. An April 30, 1984, affidavit from whistleblower Charles Stokes, enclosed as Exhibit 1, alleges 17 misleading or material false statements by licensee representatives at an April 2, 1984, public meeting on Mr. Yin's findings. Mr. Stokes' charges should be carefully considered due to his strong credibility to date on factual issues. As Mr. Yin pointed out on March 26, "Almost all of the Stokes allegations assigned to me for follow-up had been substantiated." (March 26 Yin statement, p. 1).

work could have been maintained throughout the company. However, the Pullman version pervaded the attitude of the supervisors involved." (Id., p. 8).

B. Case studies

Individual case studies highlight the results of the QA breakdown -- ineffective corrective action and dormant hardware deficiencies that haven't been fixed.

1. Bolting

Three witnesses provided affidavits describing alleged QA violations for safety-related bolting throughout Diablo Canyon. An April 18, 1984, affidavit from a confidential witness, enclosed as Exhibit 3, charges the following violations of American Institute of Steel Construction ("AISC") requirements --

(2) * 860 ⇒ (a) design drawings not specifying elongated holes;

(3) * 862 ⇒ (b) hole sizes outside of Code specifications;

(4) * D.P. 00885 ⇒ (c) torquing method;

(5) * 864 ⇒ (d) bolt reuse; [and]

(6) * 873 ⇒ (e) examples of 'packing' violating foreign material specifications.

(Exhibit 3, p. 10).

To illustrate the effects of the QA violations, the former inspector reported his discovery of a Unit I pipe rack "where six of the eight mounting/bolt holes were elongated to the point where the washers could not cover the holes . . . In some instances I found the crafts had stuffed the holes with short sections of soft tie-wire to serve as packing." (Id., pp. 2-3).

The causes of the QA violations again were deficient procedures and management's attitude. The installation procedures, Engineering Specification - Diablo ("ESD"), that set the

p. 6).

The result is that in late 1983, three years after NCR DC2-RM-002, significant procedure deficiencies remained. Mr. Lockert reports the following violations:

> [1.] The tables provided for the description of acceptable washers had not been updated per the requirements of AISC, Sec. 5, Page 191, Para. 2(a).

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

> [3.] Bolt Torque Tables in ESD 243 were still out of compliance with AISC Manual requirements as late as December '83. Discussions with Pullman Field Engineers Dale Warren and Larry Werner indicated that although the tables had been recently updated, they still do not meet AISC Manual requirements.

(Exhibit 4, p. 6). Similarly, training remained deficient. (Id., p. 7

The bottom line is that literally at the nuts and bolts level, hardware remains deficient. Between July and December 1983, when he has terminated, Mr. Lockert identified the following recurring violations:

> 1. Unauthorized modifications to fillet welds that encroached on bolt or washer land areas.

> 2. Oversize holes already QC accepted outside the tolerances of ESD 243 and AISC Manual.

> 3. Oversize holes in base plates packed with steel rods and wires without the benefit of an approved Pullman procedure. (This work was performed to a memo from Mr. Torstrom in violation of 10 CFR 50 App B, Criteria V and VI.)

> 4. Oversize welds beyond that allowed by AWS D1.1 and beyond that allowed by Pullman's ESD 243.

> 5. Defects in A-490 bolts had been found after the bolts had been "dedicated" by Pullman's QA Receiving Department and sent to the field for installation.

(Exhibit 4, p. 5).

affidavit, enclosed as Exhibit 6,

> This weld connects the "Safety Injection Accumulators" (core flood tanks) to one of the Reactor Coolant Cold leg(s). This tank is required to be available during a "loss of coolant accident" to inject borated water into the core to ensure it is and remains in a safe, shutdown condition during an accident. This is because the borated water prevents the fission process by absorbing the neutrons required for fission. A failure of this line could "prevent an Engineered Safeguards Actuation System from performing its design function (maintaining the core shutdown)." A failure of this system would also violate the Accident Analysis of the Final Safety Analysis Review of the Plant, and every avenue should be pursued to assure this system boundary has not been violated.

(Exhibit 6, p. 8).

Unfortunately, PG&E didn't take that approach. In theory, this condition was resolved through a corrective action plan approved by NRC Region V. See IE Report 50-275/83-26 (August 5, 1983). In fact, the sampling program was not properly expanded (Exhibit 6, p. 5) and a relatively inaccessible weld such as RC-2-16 was missed.

Even more significant, PG&E knew better for this particular weld, despite the sampling deficiencies. In March or April of 1983, a whistleblower had identified the deficiency on-site. (March 23 supplement to Mothers for Peace 2.206 petition, Exhibit 12, p. 5).

These case studies raise the question of how many similar deficiencies remain dormant at Diablo Canyon. No one can answer with certainty. The breakdown in corrective action helps to explain the quality indeterminate state of the plant.

III. NRC QUALITY ASSURANCE BREAKDOWN

The failure of NRC-approved corrective action in the Reactor

eroded confidence. One whistleblower cancelled out of the tour due "to fears [of] my identity becoming known and my personal safety on-the-job jeopardized. I feel the potential existed for compromising my confidentiality because the NRC was callous and awkward in handling the details for the tour." (Exhibit 2, p. 1). By contrast, the staff refused to permit another whistleblower to attend the plant tour, despite prior agreement. As the witness explained,

> The NRC's position was that they had not spoken with me, and it had not been agreed to the night before so they couldn't let me go. Mr. Parks informed me that other witnesses had decided to back out because of fears that their identities would be compromised. I agreed to go in their place. I wasn't afraid, I would have been with NRC personnel and because I didn't work there anymore, I could not have been retaliated against later. The NRC declined again and made no effort to even speak with me about my concerns. I was astonished and angered.

(Exhibit 3, p. 5).

Region V has continued to exhibit bias since the April 13 decision on low-power testing. For example, on April 30 Region V official Thomas Bishop reported that "we did not see a widespread problem" with intimidation and unfair dismissal of whistleblowers (Thomas Hayes, "Diablo Canyon Reactor Starts Up Amid Protests and Industry Praise," The New York Times, April 30, 1984, p. B8). Mr. Bishop neglected to mention that those issues are under the jurisdiction of the Office of Investigations, which has just begun its probe of alleged retaliation. Mr. Bishop's exoneration was premature, to put it mildly.

Mr. Bishop also failed to identify "an undermining of the quality assurance program" from alleged intimidation and reprisals. In this instance, Mr. Bishop's reassurances have an

it will become a threat to the public.

Respectfully submitted,

Thomas Devine
Counsel for
Mothers for Peace

EXHIBIT 3

A F F I D A V I T

My name is . I am providing this statement freely and voluntarily, without any threats, inducements or coercion to Richard Parks, who has identified himself to me as a volunteer investigator investigating alleged problems at the Diablo Canyon Power Plant.

I am providing this statement to document my concerns over the improper installation of rupture restraints, pipe supports and equipment foundations. I volunteered to personally identify these problems to the NRC representatives on the plant tour that took place on 4/11/84. My offer was declined. I felt it was necessary for me to accompany the tour to properly identify the locations of the problems that I knew existed before I terminated my employment with Pullman Power Products in 1981.

I was employed at the Diablo Canyon Plant from approximately 1978, until approximately 1979 with the G.F. Atkinson Company. My job status consisted of weld inspector. It was during that period that I functioned as an Inspector that I became intimately familiar with American Society for Testing and Materials (ASTM) and American Institute of Steel Construction (AISC) Codes relevant to bolting requirements on structural joints and surfaces

design drawing showed no enlongated holes. In all cases the personnel

advised that:

1. Work was performed by another contractor;
2. Not to worry;
3. PG&E knew about it, it was old work and was accepted as is.

had to accept these statements as being gospel, mainly because there was insufficient documentation in existence and available to dispute their claims.

This type of problem was widespread throughout the plant. I had discovered similar situations in Unit 1 Reactor Building and Unit 2 Reactor Building. In some instances I found the crafts had stuffed the holes with short sections of soft tie-wire to serve as packing. I could not understand this practice. When I questioned what document provided the instructions for this practice, none could be provided. I consulted the pipefitters involved, my supervisor, PG&E inspectors and the engineers. Their reply was that "we had always done it this way, PG&E is aware of it and had accepted it as is."

To me, this constituted covering up poor workmanship by virtue of oral procedure or at best by internal memo rather than by approved procedures or AISC/ASTM codes.

My persistance in persuing these examples of non-

(next)

state that there would be a problem with my going and had agreed the night before with Mr. Devine (GAP Legal Director), to allow another witness to go.

At approximately 7:30 P.M. on 4/11/84, I arrived at the meeting site. Shortly after my arrival, Mr. Parks and Mr. Schollenberger of the NRC were discussing my accompanying the tour. The NRC's position was that they had not spoken with me, and it had not been agreed to the night before so they couldn't let me go. Mr. Parks informed me that other witnesses had decided to back out because of fears that their identities would be compromised. I agreed to go in their place. I wasn't afraid, I would have been with NRC personnel and because I didn't work there anymore, I could not have been retaliated against later. The NRC declined again and made no effort to even speak with me about my concerns. I was astonished and angered.

Mr. Parks advised me to prepare a brief statement outlining my concerns and that he would ensure the NRC would receive it.

On 4/12/84, I presented a two page handwritten statement to Mr. Parks while he was meeting with the NRC. In this statement I stressed that I wished to speak with the NRC Office of Investigations. He asked me if I could wait around for a while and he would see if he could get the NRC to talk with me. Approximately 45 minutes later, Mr. Parks introduced me to three

(next)

with respect to a plane normal to the bolt axis. Bolted steel parts shall not be separated by gaskets and shall fit solidly together after the bolts are tightened. Holes may be punched, subpunched and reamed, or drilled, as required by the applicable code or specification. Standard holes shall have a diameter nominally 1/16-in. in excess of the nominal bolt diameter.

Where shown in the design drawings and at other locations approved by the designer, oversize, short slotted, and long slotted holes (see Table 7 in Commentary) may be used with high-strength bolts 5/8-in. diameter and longer in connections assembled as follows:

1. Oversize holes may have nominal diameters up to: 3/16-in. larger than bolts 7/8-in. and less in diameter, 1/4-in. larger than bolts 1-in. in diameter, and 5/16-in. larger than bolts 1 1/8-in. greater in diameter. They may be used in any or all plies of friction-type connections. Hardened washers shall be installed over oversize holes in an outer ply.

2. Short slotted holes are nominally 1/16-in. wider than the bolt diameter and have a length which does not exceed the oversize diameter provisions of subsection 3(a)1 by more than 1/16-in. They may be used in any or all plies of friction-type or bearing-type connections. The slots may be used without regard to direction of loading in friction-type connections but shall be normal to the direction of the load in bearing-type connections. Hardened washers shall be installed over short slotted holes in an outer ply.

3. Long slotted holes are nominally 1/16-in. wider than the bolt diameter and have a length more than allowed in subsection 3(a)2 but not more than 2½ times the bolt diameter. The slots may be used without regard to direction of loading in friction-type connections but shall be normal to the direction of the load in bearing-type connections.

Long slotted holes may be used in only one of the connected parts of either a friction-type or bearing-type connection at an individual faying surface.

Where long slotted holes are used on an outer ply, a plate washer or continuous bar of at least 5/16-in. thickness with standard holes shall be provided. This washer or bar shall be of structural grade material, but need not be hardened. If hardened washers are re-

(next)

does not produce a nut or bolt head rotation from snug tight greater than that permitted in Table 4. If manual torque wrenches are used, nuts shall be in tightening motion when torque is measured.

When using calibrated wrenches to install several bolts in a single connection, the wrench shall be returned to "touch up" bolts previously tightened, which may have been loosened by the tightening of subsequent bolts, until all are tightened to the prescribed amount.

(f) Reuse

A490 bolts and galvanized A325 bolts shall not be reused. Other A325 bolts may be reused if approved by the engineer responsible.

Retightening previously tightened bolts which may have been loosened by the tightening of adjacent bolts shall not be considered as a reuse.

6 INSPECTION

(a) The Inspector shall determine that the requirements of Sections 2,3, and 5 of this Specification are met in the work. When the calibrated wrench method of tightening is used, the Inspector shall have full opportunity to witness the calibration test prescribed in subsection 5(d).

(b) The Inspector shall observe the installation of bolts to determine that the selected procedure is properly used and shall determine that all bolts are tightened. Bolts installed by the turn-of-nut method may reach tensions substantially above the value given in Table 3, but this shall not be cause for rejection.

COMMENTARY C5 INSTALLATION

Where long slotted holes are used, experimental evidence has shown that a plate washer or continuous bar of at least 5/16-in. thickness with standard holes is necessary to provide adequate bearing. This washer or bar shall be of structural grade material but need not be hardened. However, if hardened washers are required to satisfy Specification provisions, the hardened washer shall be placed over the outer surface of the plate washer or bar.

The examples I could have identified to the NRC on the plant tour would have been Code violations with respect to:

(next)

P. 7 of GAP Petition of 5/3/84 Exhibit 4 ALLEGATION # 885

notified of such modifications.

b) Field Engineer Dale Warren issued the proper Washer Criteria for myself without notification or acceptance by Pullman or PG&E QA Departments. QA/QC Manager Harold Karner, when notified of out of date Washer Criteria in ESD 243, did not issue a Non Conformance Report nor update the present ESD 243.

ALLEGATION # 885

⇒ c) Pullman did not have the proper Torque Tables in effect three years after the writing of NCR DC2-80-RM-002.

10. Pullman did not train nor indoctrinate inspectors to the requirements of the AISC Manual for Bolting. (Accidental reinspection of work accepted in late '82 or early '83 revealed hole sizes outside the tolerances of the AISC Manual.)

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

(next)

ROUTING AND TRANSMITTAL SLIP Date 7/11/84

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. R. Vollmer		
2. J. Knight		
3.		
4.		
5.		

Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

REMARKS

Attached are notes on Allegation 1092 I received from D. Kirsch (RE) regarding small bore pipe loads. I think this is individual who also contacted Jim. I assume concern is covered by PRT Report?

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
H-Schierling	Phone No. 27100

5041-102

* GPO: 1983 O - 381-529 (232)

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

D/92

FOIA 84-741 and 84-742 G-8

ALLEGATION REPORT

1/597

AE:	ALLEGATION:	FACILITY: Diablo Canyon
ADDRESS:	Concerns with calculation of loads for small bore supports.	FILE NO: RV-84-A-005
		DATE: 6/7/84
		TIME: 2:00 P.M.
PHONE:	CONFIDENTIALITY REQUESTED (YES) NO	DOC NO:

SUMMARY OF INFORMATION:

See attached sheet — alleger would not provide name or telephone number, however will call back on 6/11/84 Monday @ 2:00 P.M to talk about discussing his problems with a structural engineer.

PAGE

PREPARED BY: G. Hernandez	DATE: 6/7/84

ACTION REQUIRED

Will call J. Knight (NRR) to discuss course of action with this issue, on 6/8/84

REVIEWED BY: G. Hernandez	DATE: 6/7/84

OFFICIAL USE ONLY — DO NOT DISCLOSE

JAN 6 1984

Viewed by G. Hernandez

6/7/84
2:00 P.M

Allegation:

(1) Dick Ice (pseudonym) ~~not known~~ will call back Monday @ 2:00 P.M.

(2) Calling from telephone booth #(805) 595-9801

(3) Wants to talk to Structural Engineer

(4) Works for OPEG at Diablo Canyon site

(5) Concerns with how loads are calculated.

Allegation #(A) Not all load combinations are considered in design — because of this believes that 10% of the small bore supports can fail.

Allegation #(B) Most of the time the loads on intermediate plates are not calculated — because of substitution of engineering judgement.

Allegation #(C) Nobody calculates normal ~~stress~~ to torsional stress in wide flange beams and channels.

Allegation #(D) People work under high stress at the jobsite.

ROUTING AND TRANSMITTAL SLIP	Date 8/30/84	
TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. J. P. Knight		
2. H. Polk		
3.		
4.		
5.		

	Action		File		Note and Return
	Approval		For Clearance		Per Conversation
	As Requested		For Correction		Prepare Reply
	Circulate		For Your Information		See Me
	Comment		Investigate		Signature
	Coordination		Justify		

REMARKS

Attached 3 allegations on bolting were recvd from R V. Please determine if NRR will evaluate them.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
H. Schierling	Phone No. 27100

5041-102

★ GPO : 1982 O - 381-529 (223)

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

~~D/10~~

G-9

NRC Form 307 (11-82) Bern/Hansen

ALLEGATION DATA FORM

Instructions on reverse side

U.S. NUCLEAR REGULATORY COMMISSION

RECEIVING OFFICE

1. Facility(ies) Involved: (If more than 3, or if generic, write GENERIC)

(Name) DIABLO CANYON 1/2

Docket Number (if applicable): 050 00275; 050 00323

2. Functional Area(s) Involved: (Check appropriate box(es))

- [ ] operations
- [x] construction
- [ ] safeguards
- [ ] other (Specify)
- [ ] onsite health and safety
- [ ] offsite health and safety
- [ ] emergency preparedness

3. Description: (Limit to 100 characters)

(1) OVERTORQUING BOLTS (2) IMPROPER USE OF A307 MATERIAL (3) TIGHTENING FLANGES WITHOUT CONTROLS

4. Source of Allegation: (Check appropriate box)

- [ ] contractor employee
- [ ] licensee employee
- [ ] NRC employee
- [ ] organization (Specify)
- [x] other (Specify) FORMER CONTRACTOR EMPLOYEE
- [ ] security guard
- [ ] news media
- [ ] private citizen

5. Date Allegation Received: MM DD YY 08 02 84

6. Name of Individual Receiving Allegation: (First two initials and last name) MM MENDONCA

7. Office: RV

ACTION OFFICE

8. Action Office Contact: (First two initials and last name) P.H. JOHNSON

9. FTS Telephone Number: 463-3745

10. Status: (Check one)

- [x] Open, if followup actions are pending or in progress
- [ ] Closed, if followup actions are completed

11. Date Closed: MM DD YY ______ 11.1 Document Nos. ______

12. Remarks: (Limit to 50 characters)

12.1 Man-hours/Date ______

13. Allegation Number: Office RV - Year 84 - A - Number 0084

Tim O'Neill
c/o Rich Parks
211A Carpentry Canyon Road
San Luis Obispo, CA 93401

(805) 544-1192

Allegation (1) In reference to ESD-238, practice at Diablo has been to torque bolts on gasket joints up to twice minimum torque in accordance with Sections 2.4.3, 2.4.3.1 and 2.4.3.2. For beyond twice this minimum torque and engineering evaluation is required per Section 2.5. However, Mr. O'Neill's calculations show that increasing to twice minimum torque value can result in excessive bolt stress; i.e., greater than allowable cold stress in ESD-238, Section 2.5.2.1 (see attached calculations). This allegation includes that there is not correlation between torque values and maximum hot allowable stress in Appendix C of ESD-238. Also, it includes that bolt tensions may exceed allowable stress on gasket material (ESD-238, Section 2.5.2.1).

Allegation (2) Use of A307 material in Class C systems (which is Class 3 in B31.7) has not been specified in PPP procedure and is not specified as allowed by ANSI B31.7. Mr. O'Neill questioned whether this was nonconformance. He was told that it was not, because B31.7 allows use of materials, and design based on ASME Section 8, and B71.0, respectively. However, this was incorrect because B71.7 specified stresses in accord with ASME Section 8 and material in accord with B31.7. He was told later that ASME Section 3 allows use of A307. The allegation is that there is no clear procedure or specifications for the use of A307.

Allegation (3) Startup has come in and tightened flanges without any apparent controls, including lack of any QC inspector. The allegation questions NPO flange bolting procedure acceptability and interface with PPP quality documentation. This includes controls for replacement gaskets used by startup and test crews. Allegation (4) PPP ESD-238, Section 3.1.2 specifies that for [illegible] work that has not had previous verification of material traceability; that QA field inspection is required. This allegation asserts that there were no controls to assure that the field inspector could verify that this requirement was satisfie[illegible]

$T = \frac{K D W}{12}$ $\quad W = \frac{12 T}{K D}$

REF. FASTENER STANDARDS
INDUSTRIAL STDS INSTITUTE
PAGE N 13 (1970)

T = TORQUE (FT LBS)
K = TORQUE COEFFICIENT (.12)
D = NOMINAL BOLT SIZE (IN.)
W = BOLT TENSION (LBF) = $S_M (A_t)$
S_M = MAX ALLOWABLE STRESS (PSI)
A_t = THREAD AREA (IN.)
A_g = GASKET AREA (UNKNOWN)

$\sigma = P/(A)$
$\sigma A = P$

1) A193 GR B7, K2 SPEC
D = 1.00 IN
T_{MIN} = 265 FT-LB
T_{MAX} = 530 FT LB
W = BOLT TENSION (LBF)
A_t = .6051 IN^2
W_{MIN} FROM SPEC = 15914 LBF

σ_M @ 650°F = 26,300 PSI
$\sigma_{M\ COLD\ BOLT}$ = 60,000 PSI
$\sigma_{M\ GASKET}$ = 30,000 PSI (FLEXITALLIC-GASKET)

$W_{T_{MIN}} = \frac{12 \frac{IN}{FT} (265\ FT\cdot LB)}{.12\ (1\ IN)} = 26.5\ KIP$

$\sigma_{T_{MIN}} = \frac{W}{A} = \frac{26.5\ KIP}{.6051\ IN^2} = 43.79\ KSI$

$W_{T_{MAX}} = \frac{12(530)}{12} = 53.0\ KIP$

31.5% DIFFERENCE

$\sigma_{T_{MAX}} = \frac{53.0}{.6051} = 87.59\ KSI$

$W_{SPEC} = T_{CALC} = \frac{.12(1.00\ IN)(60{,}000 \frac{LBF}{IN^2} \times .6051\ IN^2)}{12 \frac{IN}{FT}}$

$T_{CALC} = 363.06\ FT\text{-}LBF$

$W_{CALC} = \frac{12(363)}{.12(1.00)} = 36.3\ KIP$

$\sigma_{CALC} = \frac{36{,}300}{.6061} = 59.89\ KSI \approx 60\ KSI$ ✓

[illegible] = 5)

$S_M = 650°F$ @ 6,000 LB./IN^2

D = 1" DIA.

$W_{FROM\ SPEC}$ = 3631 LB.

T_{MIN} = 61 FT-LB

T_{MAX} = 122 FT-LB

A_t = .6051 IN^2

$$W_{MIN} = \frac{12(61)}{.12(1)} = 6100 \text{ LB}_f$$

$$\sigma_{MIN} = \frac{6100}{.6051} = 10.08 \text{ KSI}$$

$$W_{MAX} = \frac{12(122)}{.12(1)} = 12.2 \text{ KIP}$$

$$\sigma_{MAX} = \frac{12.2^k}{.6051} = 20.161 \text{ KSI}$$

$$T_{MAX\ W\ FROM\ SPEC} = \frac{.12(1.00)(3631)}{12} = 36.3 \text{ FT-LB}$$

3) A193 GR B7 K5, K16 SPEC
1/2 IN. DIA.

T_{MIN} = 34 FT-LB

T_{MAX} = 68 FT-LB

A_t = .1416 IN^2

W_{MIN} = 4078 LB$_f$

S_M = 28.8 KSI @ 450°F

$S_{M\ COLD}$ = 60,000 PSI

$$W_{T_{MIN}} = \frac{12(34)}{(.12)(.50)} = 6.8 \text{ KIP}$$

$$\sigma_{T_{MIN}} = \frac{68{,}000}{.1416} = 48.02 \text{ KSI}$$

$$W_{T_{MAX}} = \frac{12(68)}{.12(.50)} = 13.6 \text{ KIP}$$

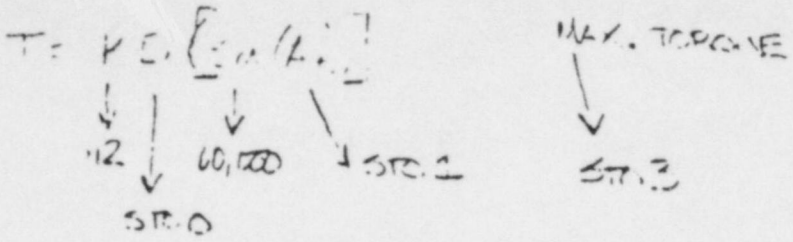
38% DIFFERENCE

$$\sigma_{T_{MAX}} = \frac{13.6^k}{.1416} = 96.04 \text{ KSI}$$

$$T_{CALC\ COLD} = \frac{.12(.50)(60{,}000 \times .1416)}{12} = 42.48 \text{ FT-LB}$$

$$W_{COLD} = \frac{12(42.48)}{.12(.50)} = 8496 \text{ LB}_f$$

$$\sigma_{COLD} = \frac{8496}{.5} = 60{,}000 \text{ PSI} \checkmark$$



PROGRAM:

LBL 60,000
RCL 1 ---> CALC. LOAD
X
RCL 0 ---> DIAM
X
.12 ---> FRIC. COEFF
X
STO 4 ---> STORE TCALC
NOP
RCL 4
RCL 3
÷
100
X↔Y
(—)

Hans

The ones marked

in yellow are those

others I made to

HARVEY AT Region V

Hope it helps

Harold

Also a copy of the

info I sent to Harvey.

to RV 7/9/84

~~D/89~~

G-7

DIABLO CANYON ALLEGATIONS

ALLEG #	ATS #	KEYPHRASE	RESP	[illegible]	CHARACTERIZATION	SOURCE	ATTACHMENT	CLOSE REF
1365	RV84A033	SECURITY	RV		ALLEGED PENETRATION OF PA AT DIABLO CANYON	ARF 2/21/84		CLOSED
1366	RV84A036	OPERATIONS	RV		GASOLINE DRAINED FROM GENERATOR WAS DUMPED IN CULVERT TO STREAM AND SAN LUIS BAY. LICENSEE INVESTIGATING	ARF 3/1/84		CLOSED
1367	RV84A037	RADIATION PROTECTION	RV		ALLEGER QUESTIONED RADIATION CONTROLS AND WAS COUNCELLED. HE FELT HARRASSED AND QUIT. HE INFORMED OF CONTROLS IN PLACE	ARF 3/1/84		
1368	RV84A050	MISC INDIV CONCERNS	RV		OFFSITE BEHAVIOR OF CONTRACT EMPLOYEE MAY REFLECT ON RELIABILITY WHILE ON SITE	ARF 5/29/84		
1369	RV84A073	QUICK FIX	NRR		FIELD QUICK FIX PROCEDURE SUPERCEDES DESIGN DRAWINGS	MTG TRAN OF 5/22/84		
1370	RV84A073	WELDING/ PRACTICES	NRR		EXPERIENCE DICTATES POST WELD HEAT TREATMENT BUT WELDING CODE DOES NOT REQUIRE	MTG TRAN OF 5/22/84		
1371	RV84A073	TRAINING	NRR		PERSONNEL WORKING IN FIELD HAVE NOT BEEN PROPERLY TRAINED	MTG TRAN OF 5/22/84		
1372	RV84A073	QUICK FIX	NRR		FIELD CHANGES WERE NOT IN ACCORDANCE WITH ESTABLISHED DOCUMENTATION	MTG TRAN OF 5/22/84		
1373	RV84A073	QA/QC	NRR		FIELD PERSONNEL DISCOURAGED FROM IDENTIFYING PROBLEMS	MTG TRAN OF 5/22/84		
1374	RV84A073	QUICK FIX	NRR		QUICK FIX PROCEDURE USED TO JUSTIFY POOR WORKMANSHIP	MTG TRAN OF 5/22/84		
1375	RV84A073	WELD SYMBOLS	NRR		WELD SYMBOLS NOT PROPERLY DELINEATED ON THE DESIGN DRAWINGS OR MISSING	MTG TRAN OF 5/22/84		
1376	RV84A073	WELDING/ PRACTICES	NRR		USE OF NON-CONFORMING A307 BOLTS AS STUDS FOR COMPLIANCE WITH ASME CODE	MTG TRAN OF 5/22/84		
1377	RV84A073	QUICK FIX	NRR		QUICK FIX PROCEDURE USED TO DESIGN HARDWARE	MTG TRAN OF 5/22/84		
1378	RV84A073	ANCHOR BOLTS/ BOLTING	NRR		ANCHOR BOLTS NOT PROPERLY EMBEDDED IN CONCRETE	MTG TRAN OF 5/22/84		
1379	RV84A073	ANCHOR BOLTS/ BOLTING	NRR		ANCHOR BOLT EMBEDMENT DEPTHS REQUIRED MORE THAN THE FLOOR THICKNESS	MTG TRAN OF 5/22/84		
1380	RV84A073	DRAWINGS/ DOCUM CONTROL	NRR		DRAWINGS CHANGED BY DRAWING ROUTING PERSONNEL WITHOUT COORDINATION WITH DESIGN	MTG TRAN OF 5/22/84		

CASE NO. 50-346
07/10/84

DISCUSSION ATTACHMENT

ALLEG #	ATT #	KEYPHRASE	RESP DEPT OF	CHARACTERIZATION	SOURCE	ATTACHMENT CLOSE REF
1381	RVB4A073	IMPROPER INSTALLATION	NRR	NUT ON STUD IN AUX FEED WATER SYSTEM COULD NOT BE INSTALLED PROPERLY. NUT WAS CUT IN HALF AND INSTALLED THEN TACK WELDED TO BASE PLATE	MTG TRAN OF 5/22/84	
1382	RVB4A073	DRAWINGS/ DOCUM CONTROL	NRR	AS BUILT DRAWINGS DO NOT CURRENTLY REFLECT THE ACTUAL FIELD CONDITION	MTG TRAN OF 5/22/84	
1383	RVB4A073	QA/QC	NRR	QUALITY CONTROL PROCEDURE NOT PROPERLY DOCUMENTED / NOT FOLLOWED BY PERSONNEL	MTG TRAN OF 5/22/84	
1384	RVB4A073	TRAINING	NRR	FIELD PERSONNEL HAVE NOT BEEN PROPERLY TRAINED. ONLY READING OF DOCUMENTS IS REQUIRED	MTG TRAN OF 5/22/84	
1385	RVB4A073	QA/QC	NRR	QC PEOPLE ARE NOT FAMILIAR WITH CODES AND SPECIFICATIONS	MTG TRAN OF 5/22/84	
1386	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	UNIT 2 HILTI WITH ANCHOR BOLTS NOT REMOVED FROM WALLS. JUST CUT OFF FLUSH. NEW ANCHOR BOLTS ARE INSTALLED 1.5 INCHES AWAY WITHOUT DOCUMENTING LOCATION OF OLD BOLT	MTG TRAN OF 5/22/84	
1387	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	UNIT 2 SUPPORT LAYOUTS ARE BEING MADE WITHOUT APPROVED CONSTRUCTION DRAWINGS OR PROCEDURES. DRILLING HOLES AND DRY PACKING VACATED HOLES FOR SPRINKLER HANGERS	MTG TRAN OF 5/22/84	
1388	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	VACATED HOLES IN AUX BLDG ELEVATION 85	MTG TRAN OF 5/22/84	
1389	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	HOLES DRILLED IN THE CONTAINMENT WALL DURING SUPPORT INSTALLATION	MTG TRAN OF 5/22/84	
1390	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	NO PROCEDURE EXISTS FOR REPAIRING HOLES DRILLED INTO CONCRETE	MTG TRAN OF 5/22/84	
1391	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	NO PROCEDURE EXISTS FOR INSTALLING THRU BOLTS OR INSPECTING HOLES	MTG TRAN OF 5/22/84	
1392	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	USE OF A-36 MATERIAL FOR THRU BOLTS INSTEAD OF A490 OR A 325 BOLTS IN SUPPORTS	MTG TRAN OF 5/22/84	
1393	RVB4A073	INSPECTOR QUALIFICATION	NRR	INSPECTORS ON SITE DO NOT MEET REQUIREMENTS OF ANSI 45.2.6	MTG TRAN OF 5/22/84	
1394	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	HANGER DIESEL GENERATOR EXHAUST ANCHOR BOLT HAS INSUFFICIENT EDGE DISTANCE	MTG TRAN OF 5/22/84	
1395	RVB4A073	ANCHOR BOLTS/ BOLTING	NRR	HILTI THRU BOLTS WERE NOT USED ON OPPOSITE SIDES OF WALLS VERY CLOSE TO EACH OTHER	MTG TRAN OF 5/22/84	

DIABLO CANYON ALLEGATIONS

ALLEG #	ATS #	KEYPHRASE	RESP DEPT OF	CHARACTERIZATION	SOURCE	ATTACHMENT	CLOSE REF
1396	RV84A073	DESIGN	NRR	ABILITY OF THE SUPPORTING MAIN STRUCTURE SHOULD BE EVALUATED FOR THE SUPPORT LOADS REACTED BY THAT STRUCTURE	MTG TRAN OF 5/22/84		
1397	RV84A073	DRAWINGS/ DOCUM CONTROL	NRR	DIESEL GENERATOR FUEL OIL TRANSFER SYSTEM SUPPORT 2085R HAS A NUT BEARING ON WELD AND HALF OF A SHIM PLATE. THIS CONDITION NOT SHOWN ON AS-BUILT DRAWING	MTG TRAN OF 5/22/84		
1398	RV84A073	WELDING/ PRACTICES	NRR	WING PLATE ON SUPPORT 2085R USED PARTIAL PENETRATION WELD INSTEAD OF FULL PENETRATION WELDS CONSTRUCTION DRAWINGS REQUIRED	MTG TRAN OF 5/22/84		
1399	RV84A073	RHR VALVES	NRR	UNIT 2 RHR CONTAINMENT SUMP RECIRCULATION LINE TO RHR PUMP IS SEAL WELDED WITH NO PENETRATION	MTG TRAN OF 5/22/84		
1400	RV84A073	ANCHOR BOLTS/ BOLTING	NRR	HILTI QUIK BOLTS WERE CUT OFF AND LEFT IN WALLS	MTG TRAN OF 5/22/84		
1401	RV84A073	ANCHOR BOLTS/ BOLTING	NRR	ANCHORS CUT OFF FLUSH WITH WALLS, LEFT IN HOLES, AND NEW HOLES DRILLED WITH INSTALLATION OF NEW ANCHOR BOLTS IN VIOLATION OF MINIMUM DISTANCE CRITERIA	MTG TRAN OF 5/22/84		
1402	RV84A073	ANCHOR BOLTS/ BOLTING	NRR	~~BOLT~~ GROUTING PROCEDURE DOES NOT LOAD THE GROUT	MTG TRAN OF 5/22/84		

Basis Right

5/22/84 Transcript

#	~~[illegible]~~ Description	Pg of transcript
-RR 1	field Quick fix procedure supercedes the design drawings	7
2	Experience dictates post weld heat treatment necessary, but code does not require	7
3	Persons working in field have not ~~have knowledge of~~ been properly trained	8
4	field changes were not in accordance with established documentation	8
5.	field personal discouraged from identifying problems	9
6.	Quick fix procedure was used to justify poor workmanship	11
7.	weld symbols not properly delineated on the design drawings or missing	13
8	Use of non conforming A 307 boltes as studs for compliance with ASME Code. (Code case)	14
9	use of Quick Fix procedure to design hardware -	16-19
10	ANCHOR BOLTS not properly embeded into concrete and had other material in the cone of reaction	21

1378

& OTS

ZR		Description	Travelers pg.
11	1379	Anchor bolt embedment depths required more than the floor thickness (CAR 6 # 1120)	22
12	1383	Drawings changed by drawing routing personnel without coordination with design	23
13	1381	NUT ON STUD IN AUX FEEDWATER could not be installed properly. The nut was cut in half and installed then tack welded to base plate (Ref DP 12335-P and TC 1-14461)	28
14	1382	As built drawings do not correctly reflect the actual field condition were not properly documented and	30
15	1353	Quality Control procedures were not followed by personnel.	34
16	1384	field personnel have not been properly trained. O.J.T. reading of documents is required.	36
17	1385	QC people are not familiar with the code and specifications	38
18	1386	UNIT 2 HILTI KWIK BOLTS anchor not removed from walls just cut off flush. A new anchor bolt is installed 1.½" away with documenting the location of the old bolt	41

	Description	Transcript page no.
1388	UNIT 2 support layouts are being made without approved construction drawings and procedures. Drilling holes and dry packing vacated holes. SPRINKLER HANGER.	42
1389	Vacated holes in GE/GW area of elevation 85 floor in Aux Bldg.	43
1389	29 holes drilled in the containment wall during a support installation	44
1390	no procedure exist for repairing holes drilled into concrete	44
1391	no procedure exist for installing thru ~~wall~~ bolts or inspecting thru holes	51-55
1392	use of A-36 all thread material for thru bolts instead of A 490 or A 325 bolts in support 2-47R	54-57
1393	25 inspectors on site cannot meet requirements of ANSI A 45.2.6	70
1394	Hanger 2-47R Diesel generator exhaust anchor bolt has improper embedment in a thin wall section	75

7 UT 5

Rec #		Description	transcript page #
27	1395	Hilti Kwik Bolts were put in on opposite sides of walls very close to each other (see allegation 1124)	77+84
28	1396	The ability of the supporting main structure should be evaluated for the support loads reacted by that structure	80+81
29	1397	Diesel Generator fuel oil transfer system support 2085R has a nut bearing on weld and half of a shim plate." This condition not shown on the as built drawings (Documents given to staff 5/22/84)	93 +107
30	1398	Wing plate on support 2085R using partial penetration welds instead of full penetration welds the construction drawings required. RHR unit 2 Containment sump recirculation line to RHR pump plate is seal welded with no penetration	94-96 and 106
02. 31	1399	Base plate grouting procedure does not load the grout.	96-
32	1400	Hilti Kwik Bolts were cut off and left in walls	110

Item #	Description	Transcript Page #
33	4 anchors cut off flush with walls, left in holes, and new holes drilled with installation of new anchor bolts. Edge distances violated.	113
1401		

Items all through the transcript and especially the last few pages the allegers noted they would supply specifics - if they did where are they - most of the items are very vague and will be hard to investigate.