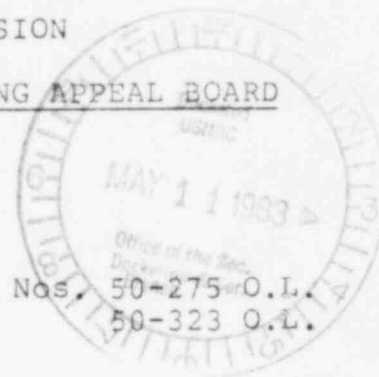


UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of)
PACIFIC GAS AND ELECTRIC COMPANY)
(Diablo Canyon Nuclear Power)
Plant, Units 1 and 2))
_____)

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



JOINT INTERVENORS' MOTION TO
REOPEN THE RECORD ON THE ISSUE
OF CONSTRUCTION QUALITY ASSURANCE

Pursuant to 10 C.F.R. § 2.718(j) and the April 21, 1983 Memorandum and Order of the Atomic Safety and Licensing Appeal Board ("Appeal Board"), the SAN LUIS OBISPO MOTHERS FOR PEACE, SCENIC SHORELINE PRESERVATION CONFERENCE, INC., ECOLOGY ACTION CLUB, SANDRA SILVER, GORDON SILVER, ELIZABETH APFELBERG, and JOHN J. FORSTER ("Joint Intervenors") hereby request the Appeal Board to reopen the record in the Diablo Canyon Nuclear Power Plant ("Diablo Canyon") licensing proceeding for the purpose of receiving significant new evidence of the recently established deficiencies in the Diablo Canyon Construction Quality Assurance and Quality Control ("CQA/QC") program.^{1/} This

^{1/} "Quality Assurance" comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality assurance includes "Quality Control," which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

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motion is based on evidence revealed during the past 18 months and documented in the referenced affidavits of Richard B. Hubbard,^{2/} the sworn statements of Virgil H. Tennyson and Richard E. Roam to representatives of the Attorney General of the State of California,^{3/} and other materials cited herein.

For the reasons set forth below, the Joint Intervenors submit that these deficiencies violate the applicable Commission regulations and mandate an order by this Board (1) vacating the Atomic Safety and Licensing Board's ("Licensing Board") July 17, 1981 findings approving the Diablo Canyon CQA/QC program; (2) revoking the low power testing license approved by the Licensing Board in its July 17, 1981 decision; (3) vacating the authorization of full power operation approved by the Licensing Board in its August 31,

^{2/} Mr. Hubbard is a Professional Quality Engineer with seventeen years experience in the design, manufacture, construction, and operation of nuclear power generation facilities, including eleven years experience in responsible managerial positions in the Nuclear Instrumentation Department, Atomic Power Equipment Department, and Nuclear Energy Control and Instrumentation Department of the General Electric Company. Since 1976, he has had substantial involvement in both the Diablo Canyon proceeding, as a consultant to the Joint Intervenors and to the Governor of California. The affidavits relied upon herein and previously served on the Board are (1) Affidavit of Richard B. Hubbard Concerning Breakdowns in the Diablo Canyon Quality Assurance Program (filed June 7, 1982) ("Hubbard Affidavit"); and (2) Supplemental Affidavit of Richard B. Hubbard Concerning Breakdowns in the Diablo Canyon Quality Assurance Program (filed March 29, 1983) ("Hubbard Supplemental Affidavit"). See Exhibit B hereto.

^{3/} Until March 1983, Mr. Tennyson and Mr. Roam served as manager and assistant manager of quality control, respectively, for the Howard P. Foley Company, one of the principal general construction contractors at Diablo Canyon. Their sworn statements, (April 5, 1983) ("TR") were served on the Board by hand on April 13, 1983. See Exhibit B hereto.

1982 Initial Decision; and (4) reopening the record for hearing and the submission of relevant evidence by all parties.^{4/}

The standards applicable to a motion to reopen the record are well established. Such a motion should be granted if (1) it concerns significant new information relevant to safety; (2) the new information, if considered originally, would have changed the result; and (3) the motion is timely. In the Matter of Kansas Gas and Electric Co., et al. (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 328 (1978); In the Matter of Vermont Yankee Nuclear Power Corporation (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973); id., ALAB-167, 6 AEC 1151-52 (1973). Each of these criteria is satisfied in this case, and, accordingly, the Joint Intervenors' motion to reopen the record should be granted and their proposed contention -- attached hereto as Exhibit A -- be admitted for hearing.

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^{4/} By Memorandum and Order dated April 21, 1983, the Appeal Board deferred a decision on the Joint Intervenors' June 7, 1982 Motion to Reopen the Record and the Governor of California's August 2, 1982 Motion to Reopen the Proceeding to Take Evidence on Quality Assurance, to the extent that those motions concerned the issue of construction quality assurance. At the same time, the Board directed those parties "to refile to open the record if they wish to pursue the issue" The instant motion is filed in response to that Memorandum and Order.

SUBSTANTIAL EVIDENCE OF CQA/QC
DEFICIENCIES AT DIABLO CANYON
CONSTITUTES SIGNIFICANT NEW
INFORMATION RELEVANT TO SAFETY

In its July 17, 1981 Partial Initial Decision ("PID") in this proceeding, the Licensing Board found that:

The Diablo Canyon quality assurance programs for both the Design and Construction Phase and the Operations Phase have been and are in compliance with the requirements of 10 C.F.R. 50, Appendix B, and that the implementation of both programs is acceptable to the Board.^{5/}

On the basis of this finding, the Board approved PGandE's low power testing license application for Unit 1, and on September 22, 1981, after brief Commission review, the license was issued. Those findings are an essential underpinning as well for the Licensing Board's August 31, 1982 authorization of full power licensing of Diablo Canyon.

In their June 7, 1982 Motion to Reopen the Record, the Joint Intervenors described in extensive detail the evidence then available that the Licensing Board's finding was clearly erroneous. Through the affidavit of Richard B. Hubbard, they outlined the unprecedented series of QA/QC failures which compelled the Commission, on November 19, 1981, to suspend the low power license issued only months before. Mr. Hubbard described also the increasing number and extent of the design and construction errors at Diablo Canyon, their significance to safety, and the findings, conclusions, and implications of

^{5/} PID, at 11.

the March 1982 report by Roger F. Reedy, Inc., regarding the QA/QC programs -- or, more accurately, the lack thereof -- established by PG&E and its seismic safety-related subcontractors prior to June 1978.^{6/}

In his Supplemental Affidavit, filed on behalf of the Governor of California in March 1983, Mr. Hubbard analyzed recent evidence regarding the Diablo Canyon QA/QC programs for nonseismic design and concluded that "the Phase II (nonseismic) results to date are at the very least equally

^{6/} Based on a comparison of the QA/QC programs reviewed to the 10 C.F.R. Part 50, Appendix B criteria, Roger Reedy found a shocking noncompliance with those regulatory standards. Reedy's three principal conclusions were the following:

- a) The PG&E Quality Assurance program for design work was not adequate in areas of policy, procedures and implementation. The Quality Assurance organization has insufficient program responsibility.
- b) A general weakness existed in internal and external interface and document controls. This questions whether appropriate design information was being exchanged and utilized by design groups and consultants. One concern is if the latest Hosgri seismic data was inputted for design analysis.
- c) The design verification program was not formalized and was inconsistently implemented and documented. This included major gaps in design overviews of the design approach for mechanical and other equipment.

Quality Assurance Review and Audit Report, Phase I (March 8, 1982) (emphasis added).

significant to the Phase I (seismic) findings. . . ."7/ In support of this conclusion, he reviewed in detail the design reverification findings and cited, among other things, the observation by the Independent Design Verification Program ("IDVP") Manager William Cooper that "in the very broad look on Phase II we are coming up with about the same number of significant items as on Phase I. . . ."8/

Although focusing primarily on the evidence of deficiencies in design QA/QC activities, the Joint Intervenors' motion and the documentation on which it was based dealt also with the implications of that and other evidence for CQA/QC at Diablo Canyon. Indeed, the initial Hubbard affidavit explicitly recognizes that the pervasive violations of Appendix B criteria related to design suggest that "[o]ther, or the same, QA criteria relevant to site QA/QC may also have been violated."9/ He explained as follows:

There is insufficient data to support a conclusion that QA/QC for site activities, particularly construction, met Appendix B requirements. Indeed, repeated QA program breakdowns have been found in all areas subject to the NRC's narrow reinspection program, leading one to believe that site QA would also be found to be deficient if it were examined in detail. Thus, there is no evidence that site QA may not have

7/ Hubbard Supplemental Affidavit, at 15-16.

8/ Id. at 16. This finding is not surprising given the concession by George Maneatis, PGandE Vice President for Facilities Development, to Darrell Eisenhut of the NRC that there was no distinction between the PGandE QA/QC process for seismic and nonseismic design in the pre-1978 period, the period when most of the nonseismic design for Diablo Canyon was accomplished. Hubbard Supplemental Affidavit, at 16-17.

9/ Hubbard Affidavit, at 11.

experienced the same basic problems as design QA. This is particularly true since site QA/QC activities were covered by the same QA manual as design QA, which has been shown to have been inadequately planned and implemented.^{10/}

This conclusion is consistent with past evidence of numerous instances of differences between the "as-built" and "as designed" configuration of the plant.^{11/} For example, Mr. Hubbard cited the NRC Bulletin 79-14 inspection conducted by PGandE in which approximately 26% of the safety-related piping and supports were found to have discrepancies significant enough to require reanalysis. Similarly, a GAO audit conducted in 1977 found that five of the seven items reviewed at Diablo Canyon were deficient. Although not "new" information in a strict sense, these findings support the inference to be drawn from more recent findings of deficiencies in design QA/QC -- namely, that reasonable assurance does not exist that PGandE has established and implemented a CQA/QC program consistent with the Appendix B criteria.

The validity of this conclusion has been recognized as well by the NRC Staff. In a March 29, 1982 memorandum (attached hereto as Exhibit C) to Harold Denton from R.H. Engelken, Administrator for Region Five, the Staff described the Reedy Report as "reveal[ing] potentially serious and wideranging inadequacies in QA programs for design of the Diablo Canyon plant." With respect to the relevance of the

^{10/} Id. at 92 (emphasis added).

^{11/} Id. at 92-97.

Reedy Report to CQA/QC, the Staff stated:

The report identifies no significant adverse findings specific to the QA programs of PG&E and its contractors for on-site construction activities. However, the nature of the adverse findings regarding PG&E's own QA program and particularly the lack of PG&E management periodic assessment of the effectiveness of QA program implementation, raises (implicitly at least) questions regarding the adequacy of these programs. (Emphasis added.)

Accordingly, the Staff recommended that the design verification program be expanded

to include an assessment, similar to the Reedy assessments for design consultants, of the QA programs for at least two principal on-site construction contractors, such as the prime civil/structural construction contractor and the reactor coolant system erection and welding contractor. (Emphasis added.)

Before the Staff had acted on the recommendation, PGandE itself announced on September 1, 1982 that it was "voluntarily" requesting that Teledyne Engineering Services ("TES") and the Stone and Webster Engineering Corporation ("SWEC") undertake a limited CQA audit for Diablo Canyon.^{12/}

^{12/} PGandE continues to assert that its decision to initiate a CQA audit was in no way a response to the accumulating evidence of design QA deficiencies. Hearing Transcript, at 208-09 (April 14, 1983). However, as NRC Staff Counsel observed regarding the Staff's March 1983 memorandum:

The headquarters staff discussed this [CQA recommendation] with the regional staff, based on what it itself was finding, [and] pretty well determined that it was going to request of PGandE that such an activity be undertaken. It was going to propose directly that the IDVP be expanded to include this type of an effort.

[Footnote 12 continued]

As designed and implemented, however, the review initiated by PGandE and conducted by TES/SWEC has done nothing to allay even the concerns which necessitated that it be undertaken in the first place. As described by Richard Hubbard in his Supplemental Affidavit, the TES/SWEC CQA audit was "improperly limited or restricted" in five major aspects:

First, the number of contractors (two) was inadequate to provide an overall assessment of the quality of the Diablo Canyon construction. . . .

Second, no review of the two selected contractors' QA/QC programs was conducted to compare the programs with the regulatory requirements of Appendix B to 10 C.F.R. Part 50, GDC-1 of Appendix A and the ANSI QA/QC standards cited in the Diablo Canyon FSAR. . . .

Third, in reviewing the deficiencies, S&W apparently focused on the "safety significance" of the findings rather than focusing on what the deficiency may generically mean with regard to the overall program implementation. . . .

Fourth, the construction QA/QC review places its major emphasis on reviewing installation QA/QC records or conducting visual inspections as compared to repeating actual installation tests or physical inspections of hardware items. . . .

[Footnote 12 continued]

Very shortly before that request was about to be made, PGandE came in and said, well -- I can only speculate what went through their minds -- we see the handwriting on the wall. I think someone said, the axe is about to fall. We are going to do it. We think it is a justified effort and rather than raise concerns, let us allay them if we can. We will undertake this effort.

Id. at 235.

Finally, no attempt was made by S&W to verify the adequacy of the QA/QC process implementation at the vendors of safety items or to confirm the quality of the received safety items. . . .^{13/}

In addition to these specific shortcomings, the audit has proven virtually useless because "the reports issued fail to provide the requisite information which would enable an independent observer to evaluate what the identified deficiencies mean with regard to implementation of the QA/QC process."^{14/} Although approximately 29 CQA deficiencies had been discovered by SWEC as of March 1983, its cryptic reports preclude meaningful understanding of the generic significance of those deficiencies or of the basis for SWEC's own classification of them. Indeed, after reviewing the TES/SWEC Final Reports (ITRs 36 and 38), even the NRC has recently found them inadequate -- both too general and not internally consistent -- and has requested further information and clarification.^{15/}

^{13/} Hubbard Supplemental Affidavit, at 24-28.

^{14/} *Id.* at 24-25.

^{15/} In a May 2, 1983 letter (attached hereto as Exhibit D) from Thomas Novak, Assistant Director for Licensing, to W.E. Cooper of TES, IDVP Program Manager, the NRC noted the following inadequacies in the SWEC CQA reports:

We find that the information for closing out EOI's (Error Open Items) is inadequate. The statement that an EOI was reviewed and analyzed, including additional information provided by PG&E, and that a completion report was issued is too general. In addition, the summary and evaluation of the review results do not address the corrective action or other resolution of the

[Footnote 15 continued]

A particularly telling indictment of the inadequacy of the limited TES/SWEC audit is its apparent failure even to detect the wideranging and fundamental CQA deficiencies described in the 88-page sworn statements of Virgil H. Tennyson and Richard E. Roam to representatives of the Attorney General of California. Until March 1983 the manager and assistant manager, respectively, of quality control for one of the principal general construction contractors at Diablo -- The Howard P. Foley Company^{16/} -- Tennyson and Roam describe major flaws in the PGandE and Foley CQA programs spanning the past decade. Those flaws include, for example: (1) inadequate qualification of inspectors and failure to comply with the relevant Appendix B and ANSI 4526 requirements

[Footnote 15 continued]

deficiencies identified during the audit. We request that you provide additional information in both reports such that they are sufficiently self-contained to allow a determination of the adequacy of the basis for closing out each EOI.

Secondly, we find that the review results do not appear to be entirely consistent with specific EOI findings. For example, ITR 38 Rev. 1 states that ". . . the contractor performed his work in compliance with PG&E Specification 8752. . .". However, many EOI's in the report identify specific noncompliances with the specification. We request that you clarify how the EOI findings agree with the conclusions.

^{16/} Until 1977, Foley was responsible only for the electrical work on site. Since that time, Foley has also assumed responsibility for structural steel, mechanical, and instrumentation construction. TR, at 6; see also Meeting Transcript, NRC/PGandE, at ____ (comments of Jim Manning (PGandE) re Foley responsibility) (May 4, 1983).

(TR, at 14-17);^{17/} (2) no written procedures for qualification of inspector and supervisors (id. at 18-19); (3) inadequate ratio of inspectors to workers (id. at 23); (4) failure to document nonconformances or to implement an adequate QA/QC program at the earliest practicable time (id. at 23-27);^{18/} (5) failure to inspect work and materials (tool calibrations, electrical raceways, material receiving, weld rod control, welding procedures) (id. at 27); (6) inadequate marking of non-conforming work (id. at 31-35, 42-46); (7) inadequate independence between quality control and production (id. at 32, 47-52);^{19/} (8) failure to inspect non-safety grade structures, systems, and components important to safety (id.

^{17/} Tennyson: "Well, we were really not complying with the ANSI [45]26 requirements because we were told by Pacific Gas and Electric that we didn't have to." TR, at 15.

^{18/} Tennyson: "The only thing (non-conformance reports) we ever wrote is against a vendor if a piece of equipment came in damaged. So that will give you an idea of what kind of program it was." Id. at 26.

^{19/} Durbin: Was there any pressure put on you or any dissatisfaction indicated to you about your performance in that you were being too careful?

Tennyson: Yes, many times.

Durbin: Did you feel your department of quality control was truly independent [at Diablo]?

Tennyson: Not in any way.

Durbin: Did you feel that production was very much in control of your department or slightly in control?

Tennyson: I feel that production's influence on the project manager determined pretty much the pressures that were put on the quality control department.

Id. at 49-50.

at 53); (9) inadequate control of activities affecting quality (i.e., increase in nonconformances during "big push" in January-March 1983) (id. at 54); (10) inadequate design control (i.e., absence of detailed design sketches) (id. at 59-61); (11) harassment of inspection personnel by construction personnel (id. at 68-71); (12) improper acceptance of nonconforming materials (id. at 78-79); and (13) inadequate staffing of inspection personnel (id. at 81-82).^{20/} In sum, the testimony of Tennyson and Roam portrays a shocking disregard for QA/QC procedures, a disregard spawned in part by inordinate and plainly inappropriate concern for speed in construction even at the predictable expense of quality.

Significantly, both Tennyson and Roam indicated that they had repeatedly been pressured not simply by Foley management, but by responsible PGandE personnel as well. When asked whether they had been pressured or received complaints about their performance because they were being too careful,

^{20/} Tennyson: [W]hen I started in with the overtime (January, February 1983) I was putting anywhere from 60 to 65, 70 hours a week. Then it went up to 70 and 75 in a week or so. One week or two I put in 80 some hours, 85.

* * *

All of the inspectors were putting in a 60-hour week.

* * *

They were required to work -- it was mandatory to work ten hours a day, six days a week.

Id. at 81.

Mr. Tennyson responded, "Yes, many times," and named several PGandE personnel, including the employee responsible for contract administration with Foley.^{21/} Mr. Roam responded similarly and reported being "hounded" and "badgered" on a daily basis by PGandE personnel.^{22/}

That Tennyson and Roam are not simply disgruntled troublemakers is borne out by their length of service at Diablo Canyon and their roles as manager and assistant manager of the Foley quality control program. In addition, the NRC, on March 29, 1983, issued a Notice of Violation (attached hereto as Exhibit E) against PGandE for noncompliance by Foley Company with its procedures in connection with structural welding work at the 182' level of the Fuel Handling Building. All of the deficient welds found by the NRC inspectors had previously been examined and accepted by H.P. Foley's quality control inspectors.

This evidence indicates that PGandE's failure to establish and implement an adequate QA/QC program was not limited solely to design. To the contrary, it establishes that serious deficiencies in CQA are commonplace even through the early months of this year, at the height of the so-called "corrective action plan" and the massive modifications being

^{21/} Id. at 49.

^{22/} Id. at 51. Roam: "Well, I think a lot of it (pressure) had to come from PGandE because every morning at 7:30 sitting there is Forrest Russell (PGandE, Civil Resident Engineer). He's badgering me, how come I'm still hanging tags? How come I haven't removed any red tags? How much did I remove?"

installed by some 2,000 to 3,000 workers in Unit 1.^{23/} This evidence indicates that the quality even of the most recent work on site -- undertaken to remedy the consequences of past QA/QC failures -- is questionable at best. Moreover, given the pace of the reconstruction effort and the unprecedented number of workers required to do the work in all critical areas of the plant, it undermines the necessary confidence for licensing, including adequate assurance of the continued validity of numerous pre-operational tests of critical systems and structures conducted as a precondition to issuance of any license.^{24/}

The continuing QA/QC failures are particularly significant in this proceeding where the discovery of the Hosgri Fault after substantial construction of the facility had been completed necessitated a seismic reanalysis based on assumptions less conservative than would be utilized on other plants. The ACRS, the Staff, and the Licensing Board justified use of such less conservative techniques by the fact that Diablo Canyon had allegedly been more thoroughly analyzed than other plants, making less likely the existence of any undetected errors at Diablo Canyon.^{25/} At the very least, the continuing revelations of design and construction errors have now

^{23/} Hubbard Supplemental Affidavit, at 12-13; Meeting Transcript, NRC/PG&E, at ____ (comments of Jim Manning (PG&E) re manpower) (May 4, 1983).

^{24/} See Meeting Transcript, NRC/PG&E, at ____ (Comments of James Shiffer (PG&E) (May 4, 1983).

^{25/} See Hubbard Affidavit, at 12.

established that such an assumption was unjustified.

Given this new evidence, there is no legal basis for licensing or operation of Diablo Canyon. As Mr. Hubbard concluded in his Supplemental Affidavit:

[T]he significant new information set forth herein and in my May 24, 1982, affidavit demonstrates that PG&E and its major subcontractors failed to develop and implement a QA/QC program during the design and construction of Diablo Canyon which complied with the NRC's regulatory requirements. The examples given here document PG&E's failure to provide a QA/QC program for design and site activities in a timely fashion in compliance with the license application and the regulations for activities conducted prior and subsequent to the 1977 Board hearings. We now know that significant errors resulted from the flawed Diablo Canyon QA/QC process.

The result of the mistaken assurances concerning the comprehensiveness of the Diablo Canyon QA program from PG&E and the NRC Staff is that the Board issued a seriously flawed decision. The magnitude of significant design and construction discrepancies disclosed to date, and the widespread serious breakdown in management of the QA/QC program by PG&E and its major subcontractors, vividly illustrate the substantial uncertainty in the actual quality level achieved in design, construction, and installation of all important to safety structures, systems, and components at Diablo Canyon. A complete, statistically valid, design verification and physical inspection of all Diablo Canyon structures, systems, components, and other important safety features, as outlined in the preceding, is now both necessary and prudent. The results and underlying data, resulting from a design review and site inspection, should be subject to the scrutiny of the Board and all parties in the ongoing Diablo Canyon licensing proceeding.^{26/}

^{26/} Hubbard Supplemental Affidavit, at 35-36.

The NRC has long recognized that the "application of disciplined engineering practices and thorough management and programmatic controls to the design, fabrication, construction, and operation of nuclear power plants is essential to the protection of public health and safety and of the environment."^{27/} In light of the uncontrovertible evidence set forth in the Hubbard affidavits -- as well as the disclosures by Tennyson and Roam -- that such practices and controls have not been applied at Diablo Canyon, the Licensing Board's approval of CQA/QC at the facility and of PGandE's low and full power license applications cannot stand, and the record in this proceeding must be reopened.

II

THE RECENTLY DISCLOSED EVIDENCE OF QA/QC DEFICIENCIES AT DIABLO CANYON COMPEL DENIAL OF ANY LICENSE TO OPERATE THE FACILITY

Pursuant to 10 C.F.R. § 50.57(a), the approval for issuance of a license to operate Diablo Canyon could not have been granted by the Licensing Board in the absence of a finding that the QA/QC programs for the facility complied with the applicable criteria set forth in Appendix B to 10 C.F.R. Part 50. The recent disclosure of widespread noncompliance with those criteria as evidenced by numerous serious deficiencies in the Diablo Canyon QA/QC programs undeniably establishes that the majority of those criteria have not been

^{27/} NUREG-0774, NRC 1980 Annual Report, at 69-70 (1980).

complied with, and, thus, it undermines an essential element of the legal and factual basis for the Licensing Board's authorization of licensing for either low or full power operation. Therefore, such new information, had it been available to the Licensing Board originally, would necessarily have changed the result, and PGandE's application for a license would have been denied.

As outlined in the initial Hubbard affidavit, at 13-14, both Harold Denton and the Commission as a whole have conceded that the low power license would not have been issued had the errors disclosed during September and October of 1981 been disclosed prior to issuance of the license.^{28/} Those same errors, buttressed by the March 1982 Reedy Report, led the NRC Staff to recommend an audit of CQA in order to restore the requisite confidence for licensing. Given the most recent disclosures by Tennyson and Roam, substantial evidence now exists that the CQA programs of PGandE and at least some of its construction contractors fail to comply with a number of the Appendix B criteria applicable to CQA/QC, including:

(1) Criterion 1, concerning the responsibility for the establishment and execution of a QA program which ensures "sufficient independence from cost and schedule when opposed to safety considerations";

(2) Criterion 2, concerning establishment at the earliest practicable time of a QA program which ensures

^{28/} See Meeting Transcript, at 117 (October 9, 1981): CLI-81-30, at 3.

adequate indoctrination and training of personnel and control over activities affecting quality;

(3) Criterion 3, concerning design control and design change control procedures;

(4) Criterion 4, concerning procurement document control, including requirements for contractor and subcontractor QA/QC programs;

(5) Criterion 5, concerning prescription of activities affecting quality by documented instructions, including appropriate quantitative and qualitative acceptance criteria;

(6) Criterion 6, concerning document change control;

(7) Criterion 7, concerning conformance of purchased material and equipment to procurement documents;

(8) Criterion 9, concerning control of special processes;

(9) Criterion 10, concerning control of inspection activities;

(10) Criterion 11, concerning control of test activities, including pre-operational testing of critical structures, systems, and components important to safety;

(11) Criterion 14, concerning measures to indicate and control, by the use of markings, the status of inspections and tests;

(12) Criterion 15, concerning control of nonconforming materials, parts, or components;

(13) Criterion 16, concerning measures to assure that conditions adverse to quality are promptly identified and corrected;

(14) Criterion 17, concerning control of records necessary to furnish evidence of activities affecting quality;

(15) Criterion 18, concerning a comprehensive system of planned and periodic audits to verify compliance with all aspects of the QA/QC program.

Without question, such widespread noncompliance is no mere detail which a licensing board may choose to ignore. On the contrary, compliance with all applicable quality assurance criteria is an issue of critical importance and a mandatory prerequisite to licensing. As the Appeal Board noted in In the Matter of Consumers Power Company (Midland Plant, Units 1 and 2), ALAB-106, 6 AEC 182, 183 (1972), "[o]ne of the most significant elements of the Commission's 'defense-in-depth' approach to nuclear safety is its emphasis upon quality assurance and quality control in the construction of nuclear power plants." Another Appeal Board in In the Matter of Duke Power Company (William B. McGuire Nuclear Stations, Units 1 and 2), ALAB-128, 6 AEC 399, 410 (1973), observed that:

In an area as significant as quality assurance, the record should leave no doubt as to whether the applicant is in full compliance with applicable criteria and, if not, the basis upon which the regulatory

staff authorizes any departure from such criteria.

See also In the Matter of Consumers Power Company (Midland Plant, Units 1 and 2), LBP 74-1, 8 AEC 584, 597-600 (1974); In the Matter of Commonwealth Edison Company (Zion Nuclear Power Plant, Units 1 and 2), LBP-73-35, 6 AEC 861, 896 (1973).

Neither the public's interest in safety nor the legal right of intervenors to a hearing under the Atomic Energy Act on all issues relevant to safety is served by allowing the Licensing Board's approval of CQA/QC at Diablo Canyon to stand in the face of the substantial, still-accumulating evidence of the widespread violations of applicable regulatory standards. There is no basis to conclude with reasonable assurance that the QA/QC errors already recognized by this Board in the area of design do not also exist with respect to construction. Indeed, precisely the kind of "doubt" prohibited by this Board in Duke Power, supra, hangs like a cloud over the record in this case.

Accordingly, Joint Intervenors' motion to reopen the record to take evidence on the issue of CQA/QC must be granted.

III

THIS MOTION TO REOPEN THE RECORD IS TIMELY

Without question, this motion to reopen has been timely filed. As described in Joint Intervenors' June 7, 1982 Motion to Reopen, virtually all of the information relied upon had been disclosed only within the preceding eight months and

subsequent to the Licensing Board's July 17, 1981 decision. The instant motion, refiled at the direction of this Board, incorporates that information and supplements it with further evidence disclosed since the initial motion was filed. Any claim, therefore, that this motion is untimely should be rejected as frivolous.

IV

THE STANDARD FOR LATE FILING OF CONTENTIONS IS SATISFIED

The criteria applicable to a motion for late filing of contentions are set forth at 10 C.F.R. § 2.714(a)(1), which provides in part:

Nontimely filings will not be entertained absent a determination by the Commission, the presiding officer or the atomic safety and licensing board designated to rule on the petition and/or request, that the petition and/or request should be granted based upon a balancing of the following factors . . . :

(i) Good cause, if any, for failure to file on time.

(ii) The availability of other means whereby the petitioner's interest will be protected.

(iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.

(iv) The extent to which the petitioner's interest will be represented by existing parties.

(v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

Although the licensing boards have broad discretion in weighing the various factors, In the Matter of Virginia

Electric and Power Company (North Anna Power Stations, Units 1 and 2), ALAB-342, 4 NRC 98 (1976), the law is clear that each of the factors specified in § 2.714(a)(1) must be considered, and one is not necessarily considered dispositive of the motion. In the Matter of Long Island Lighting Company (Jamesport Nuclear Power Station, Units 1 and 2), ALAB-292, 2 NRC 631 (1975).

Each criterion is satisfied here. All of the evidence relied upon has come to light after the time for submission of contentions had expired and after the record had been closed. Although the discussion supra at Point I concerning the significance of the new evidence of QA/QC breakdowns need not be repeated here, it is clearly relevant to the question of good cause under § 2.714(a)(1). An essential element of the licensing basis in this proceeding is the Licensing Board's July 17, 1981 approval of the QA/QC program for Diablo Canyon, an approval which the disclosures of the past 18 months have discredited. Any claim that the Joint Intervenors could or should have submitted such evidence earlier is patently absurd, particularly in light of the Licensing Board's rejection of QA/QC contentions submitted by the Joint Intervenors in 1977 and 1981.

The remaining factors set forth in 10 C.F.R. § 2.714(a)(1) are also satisfied. No other means are available to protect the Joint Intervenors' interest in ensuring that the CQA/QC program at Diablo Canyon complies with regulatory standards. Indeed, as is plainly demonstrated by Richard Hubbard in his Supplemental Affidavit, at 24-28,

even the limited CQA audit managed by TES is inadequate in numerous respects, including its failure even to address the Appendix B criteria or ANSI standards. Moreover, its scope is so minimal and its findings so cryptic as to render its conclusions of only limited utility.^{29/}

The Joint Intervenors' involvement in this case attests both to the value of their participation and to the good faith nature of their interest. Consistently, the Joint Intervenors have been the only parties opposing premature and erroneous approvals by the NRC, approvals too often based on assurances from PGandE later shown to be without foundation. Thus, the extent to which they may reasonably be expected to assist in developing a sound record is substantial, and there are no other parties appropriate or able to represent the interests of the local residents of San Luis Obispo County.

Finally, the extent to which the requested reopening would broaden the issues and delay the proceeding need not be substantial. The low power license, suspended for 20 months, remains suspended, and there is no certainty as to when it might be reinstated. Similarly, the Licensing Board's authorization of full power licensing has yet to be reviewed by the Commission, and no timetable for such review has been established. In any event, the issues to be litigated would be broadened only to the extent necessary to determine the

^{29/} See discussion supra at Point I.

scope of and to resolve the CQA/QC deficiencies that exist. The NRC's obligation to protect the public health and safety mandates no less. 42 U.S.C. § 2133(d); see also Power Reactor Development Co. v. International Union of Electrical, Radio, and Machine Workers, AFL-CIO, 367 U.S. 396, 398, 81 S.Ct. 1529, 1530 (1961).

Each of the factors set forth in 10 C.F.R. § 2.714(a)(1) weighs heavily in the balance in favor of admitting Joint Intervenors' CQA/QC contention. Accordingly, this motion to reopen should be granted.

V

CONCLUSION

For the reasons stated above, in the referenced affidavits of Richard B. Hubbard, in the sworn statements of Virgil H. Tennyson and Richard E. Roam, and in the other materials cited herein, the Joint Intervenors respectfully urge that this motion be granted and an order issued (1) vacating the Licensing Board's July 17, 1981 findings approving the Diablo Canyon CQA/QC programs; (2) revoking the low power testing license authorized by the Licensing Board in

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its July 17, 1981 decision; (3) vacating the authorization of full power operation approved by the Licensing Board in its August 31, 1982 Initial Decision; and (4) reopening the record for hearing and the submission of relevant evidence by all parties.

DATED: May 10, 1983

Respectfully submitted,

JOEL R. REYNOLDS, ESQ.
JOHN R. PHILLIPS, ESQ.
Center for Law in the
Public Interest
10951 W. Pico Boulevard
Los Angeles, CA 90064
(213)470-3000

DAVID S. FLEISCHAKER, ESQ.
P. O. Box 1178
Oklahoma City, OK 73101

By


JOEL R. REYNOLDS

Attorneys for Joint Inter-
venors
SAN LUIS OBISPO MOTHERS FOR
PEACE
SCENIC SHORELINE PRESERVATION
CONFERENCE, INC.
ECOLOGY ACTION CLUB
SANDRA SILVER
ELIZABETH APFELBERG
JOHN J. FORSTER

EXHIBIT A

Proposed Contention on Construction
Quality Assurance/Quality Control

Pacific Gas and Electric Company ("PGandE") and its major subcontractors have failed to develop and implement in a timely fashion a Quality Assurance/Quality Control ("QA/QC") Program for the construction and modification of structures, systems, and components important to safety at Diablo Canyon Nuclear Power Plant ("Diablo Canyon"), which QA/QC program:

(a) meets the requirements of General Design Criterion 1 of Appendix A to 10 C.F.R. Part 50;

(b) meets the following 10 C.F.R. Part 50 Appendix B criteria:

(1) Criterion 1, concerning the responsibility for the establishment and execution of a QA program which ensures "sufficient independence from cost and schedule when opposed to safety considerations";

(2) Criterion 2, concerning establishment at the earliest practicable time of a QA/QC program which ensures adequate indoctrination and training of personnel and control over activities affecting quality;

(3) Criterion 3, concerning design control and design change control procedures;

(4) Criterion 4, concerning procurement document control, including requirements for contractor and subcontractor QA/QC programs;

(5) Criterion 5, concerning prescription of activities affecting quality by documented instructions, including appropriate quantitative and qualitative acceptance criteria;

(6) Criterion 6, concerning document change control;

(7) Criterion 7, concerning conformance of purchased material and equipment to procurement documents;

(8) Criterion 9, concerning control of special processes;

(9) Criterion 10, concerning control of inspection activities;

(10) Criterion 11, concerning control of test activities, including pre-operational testing of critical structures, systems, and components important to safety;

(11) Criterion 14, concerning measures to indicate and control, by the use of markings, the status of inspections and tests;

(12) Criterion 15, concerning control of nonconforming materials, parts, or components;

(13) Criterion 16, concerning measures to assure that conditions adverse to quality are promptly identified and corrected;

(14) Criterion 17, concerning control of records necessary to furnish evidence of activities affecting quality;

(15) Criterion 18, concerning a comprehensive system of planned and periodic audits to verify compliance with all aspects of the QA/QC program.

(c) assures that PGandE has met the license commitments set forth in its Final Safety Analysis Report ("FSAR") for Diablo Canyon as required by 10 C.F.R. Part 50.57(a) and 10 C.F.R. 50.34(b).

Further, the Independent Design Verification Program ("IDVP") audit of construction quality assurance and quality control at Diablo Canyon is inadequate to provide reasonable assurance of compliance with all applicable regulatory standards. Such audit is inadequate because:

(a) The number of contractors (two) was inadequate to provide an overall assessment of the quality of the Diablo Canyon construction;

(b) No review of the two selected contractors' QA/QC programs was conducted to compare the programs with the regulatory requirements of Appendix B to 10 C.F.R. Part 50, GDC-1 of Appendix A and the ANSI QA/QC standards cited in the Diablo Canyon FSAR;

(c) In reviewing the deficiencies, S&W apparently focused on the "safety significance" of the findings rather than focusing on what the deficiency may generically mean with regard to the overall program implementation;

(d) The construction QA/QC review places its major emphasis on reviewing installation QA/QC records or conducting visual inspections as compared to repeating actual installation tests or physical inspections of hardware items;

(e) No attempt was made by TES/SWEC to verify the adequacy of the QA/QC process implementation at the vendors of safety items or to confirm the quality of the received safety items;

(f) The sampling procedures utilized by TES/SWEC relied on subjective judgment rather than statistically valid sampling techniques;

(g) The audit was improperly limited to safety-related structures, systems, and components rather than all structures, systems, and components important to safety;

(h) The Interim Technical Reports issued by TES/SWEC fail to document the basis for the IDVP findings, recommendations, and/or conclusions set forth in such reports.

Finally, PGandE has failed to perform a systematic review and demonstration of the validity of all results of pre-operational tests previously conducted with respect to any Diablo Canyon structures, systems, and components important to safety which have been affected by the reconstruction and modification effort conducted since September 1981. PGandE has failed to identify and perform (in accordance with written test procedures as prescribed by Criterion 11 of 10 C.F.R. Part 50) the additional testing required to demonstrate that all Diablo Canyon structures, systems, and components will perform satisfactorily in service.

EXHIBIT B

Several important documents relevant to this application have already been served on this Board in connection with the Joint Intervenors' June 7, 1982 Motion to Reopen the Record and the Governor's August 2, 1982 Motion to Reopen the Proceeding to Take Evidence on Quality Assurance. Because of their considerable length, they are incorporated herein by reference rather than attached as exhibits. Those documents, together with any attachments, are the following:

- (1) Affidavit of Richard B. Hubbard Concerning Breakdowns in the Diablo Canyon Quality Assurance Program (May 24, 1982; filed June 7, 1982);
- (2) Supplemental Affidavit of Richard B. Hubbard Concerning Breakdowns in the Diablo Canyon Quality Assurance Program (March 26, 1983; filed March 29, 1983);
- (3) Sworn Statements of Virgil H. Tennyson and Richard E. Roam (April 5, 1983; served by hand April 13, 1983).

Exhibit C

Memorandum to Denton from Engelken Re
Diablo Canyon Design Verification Program

(March 29, 1982)

MAR 29 1982

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

FROM: R. H. Engelken, Regional Administrator

SUBJECT: DIABLO CANYON DESIGN VERIFICATION PROGRAM

This is in response to recent telephone discussions between you and me and members of our staffs regarding the above subject. We have examined the recent reports by R. F. Reedy, Inc. regarding the assessment of the Quality Assurance (QA) programs of PG&E and its design seismic consultants. The findings of these reports are generally consistent with the findings of Region V's inspection which was undertaken following initial discovery and reporting of seismic design errors and reveal potentially serious and wide ranging inadequacies in QA programs for design of the Diablo Canyon plant.

The report identifies no significant adverse findings specific to the QA programs of PG&E and its contractors for on-site construction activities. However, the nature of the adverse findings regarding PG&E's own QA program and particularly the lack of PG&E management periodic assessment of the effectiveness of QA program implementation, raises (implicitly at least) questions regarding the adequacy of these programs.

In consideration of the above, we offer the following recommendations regarding the current scope of the design verification program.

1. The results of an assessment of the QA programs of selected non-seismic safety related design consultants, similar to the Reedy assessments recently completed for seismic design consultants, should be provided to the staff prior to NRC granting authorization for the resumption of fuel loading and low power testing under the operating license.
2. Interim findings of the verification program for Phase II, sufficient to make a preliminary judgment as to the overall adequacy of design effort, should be provided to the staff for those non-seismic design consultants where significant adverse QA program findings result from 1. above, prior to NRC granting authorization for the resumption of fuel loading and low power testing under the operating license.
3. Expand the scope of Phase II of the current verification program to include an assessment, similar to the Reedy assessments for design consultants, of the QA programs for at least two principal on-site construction contractors, such as the prime civil/structural construction contractor and the reactor coolant system erection and welding contractor.

We would be pleased to discuss these recommendations with you further should you wish.

Original signed by
R. H. Engelken
R. H. Engelken
Regional Administrator

cc: H. E. Schierling, NRR

Exhibit D

Letter to Cooper from Novak
Re TES/SWEC Interim Technical
Reports 36 and 38
(May 2, 1983)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 2 1983

Docket No.: 50-275

Dr. W. E. Cooper
130 Second Avenue
Waltham, Massachusetts 02254

Dear Dr. Cooper:

We have reviewed ITR 36 Rev. 0 and ITR 38 Rev. 1 which provide the evaluation and conclusions of the Stone & Webster audit of the QA that was applied to the Diablo Canyon Unit 1 construction activities under G. F. Atkinson and Wismer & Becker, respectively. Based on our review we have the following comments:

We find that the information for closing out EOI's is inadequate. The statement that an EOI was reviewed and analyzed, including additional information provided by PG&E, and that a completion report was issued is too general. In addition, the summary and evaluation of the review results do not address the corrective action or other resolution of the deficiencies identified during the audit. We request that you provide additional information in both reports such that they are sufficiently self-contained to allow a determination of the adequacy of the bases for closing out each EOI.

Secondly, we find that the review results do not appear to be entirely consistent with specific EOI findings. For example, ITR 38 Rev. 1 states that "...the contractor performed his work in compliance with PG&E Specification 8752...". However, many EOI's in the report identify specific noncompliances with the specification. We request that you clarify how the EOI findings agree with the conclusions.

We request that you revise both reports in accordance with the above two comments.

Sincerely,

A handwritten signature in dark ink, appearing to read "Tom Novak".

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

cc: See next page

Exhibit E

NRC Notice of Violation to PGandE Re
Foley CompanyProcedural Violations

(March 29, 1983)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V

1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

MAR 29 1983

Docket Nos. 50-275, 50-323

Pacific Gas and Electric Company
P. O. Box 7442
San Francisco, California 94120

Attention: Mr. Philip A. Crane, Jr.
Assistant General Counsel

Gentlemen:

Subject: NRC Inspection of Diablo Canyon Units Nos. 1 and 2

This refers to the routine inspection, conducted by Messrs. G. H. Hernandez and W. J. Wagner of this office on February 28-March 4, 1983, of activities authorized by NRC License No. DPR-76 and Construction Permit No. CPPR-69 and to the discussion of our findings with Mr. R. D. Etzler and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

Based on the results of this inspection, it appears that one of your activities was not conducted in full compliance with NRC requirements, as set forth in the Notice of Violation, enclosed herewith as Appendix A.

Your response to this Notice is to be submitted in accordance with the provisions of 10 CFR 2.201 as stated in Appendix A, Notice of Violation.

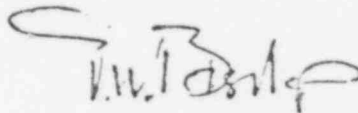
In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

MAR 29 1983

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

The responses directed by this letter and the accompanying Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Sincerely,



T. W. Bishop, Chief
Reactor Project Branch No. 2

Enclosures:

- A. Notice of Violation
- B. Inspection Report
Nos. 50-275/83-08
50-323/83-07

cc w/o enclosure B:

- W. A. Raymond, PG&E
- R. C. Thornberry, PG&E (Diablo Canyon)

APPENDIX A

NOTICE OF VIOLATION

Pacific Gas and Electric Company
P. O. Box 7442
San Francisco, California 94120

Docket No. 50-275
License No. DPR-76

As a result of the inspection conducted on February 28 - March 4, 1983, and in accordance with the NRC Enforcement Policy (10 CFR Part 2, Appendix C), 47 FR 9887 (March 9, 1982), the following violation was identified:

10 CFR 50, Appendix B, Criterion V, as implemented by Section 17.1.5 of the FSAR and the PG&E Quality Assurance Manual Section V states in part that, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings...and shall be accomplished in accordance with these instructions, procedures, or drawings..."

The Howard P. Foley Quality Control Procedure for AWS D1.1 Welding, QCP-5A, Revision 8, references in paragraph 2.0 the latest edition of AWS D1.1 (the Structural Welding Code) as the applicable code for structural steel welding.

AWS D1.1-1982 in paragraph 3.6.1 states that, "The faces of fillet welds maybe slightly convex, flat, or slightly concave as shown in Figures 3.6(A) and (B) with none of the unacceptable profiles shown in Figures 3.6(C)", and in paragraph 8.15.1.3 that, "All craters are filled to the full cross section of the weld."

AWS D1.1-1982, "Commentary on Structural Welding-Steel", paragraph 6.5, "Inspection of Work and Records", states in part that, "Die stamping of welds is not recommended since die stamp marks may form sites for crack initiation."

The Howard P. Foley Quality Control Procedure for AWS D1.1 Welding, QCP-5A, Revision 8, states as follows:

- paragraph 5.2, "Each welder shall be assigned a unique numbered and lettered identification stamp".
- paragraph 5.2.1, "Each welder shall stamp his identification number in the proximity of his weld, in sufficient quantity to effectively identify his work."
- paragraph 9.1, "Welds shall conform as closely as practical to design requirements and exposed faces of welds shall be reasonably smooth and regular."
- paragraph 11.1, "Each welding inspector shall be assigned a unique I.D. stamp."
- paragraph 11.1.1, "Each welding inspector will stamp in sufficient quantity to identify the accepted work."

- paragraph 11.5.1.4, "Fillet welds may be 1/16 inch undersized, providing that the undersized portion does not exceed 10% of the total length of the weld."
- paragraph 11.5.1.7, "The weld shall be clean and free of slag."

Contrary to the above on March 2 and 3, 1983 the inspector found the following procedural violations at the 182' elevation of the Unit 1 Fuel Handling Building:

Connection No. G at Column No. 14⁷

<u>Plate No.</u>	<u>Weld Nos.</u>	<u>Discrepancy</u>
D005-2	45	No welder's stamp
	52	No welder's stamp/ no inspector's stamp
	54	Weld profile not in accordance with AWS D1.1 figure 3.6(C) - Insufficient throat
	60	No welder's stamp/ no inspector's stamp
D005-4	56	Welder's stamp on weld/ no inspector's stamp
	58	No welder's stamp
	46	Welder's stamp on weld
	62	Slag covering one-half of weld/no welder's and inspector's stamp
	47	No welder's stamp
	63	Welder's stamp on weld

Connection No. H at Column 15³

<u>Plate No.</u>	<u>Weld Nos.</u>	<u>Discrepancy</u>
A005-2	13A	Undersize by 1/8"
C005-2	33	Weld profile not in accordance with AWS D1.1 figure 3.6(C) -Insufficient throat/ Crater at weld termination
	35	Weld profile not in accordance with AWS D1.1 figure 3.6(C) -Insufficient throat/ Crater at weld termination
D005-2	54	Weld profile not in accordance with AWS D1.1 figure 3.6(C) -Insufficient throat
D005-3	57	Welder's stamp on weld

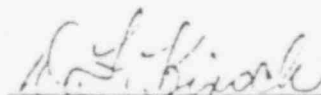
All of the above welds had been examined and accepted by H. P. Foley's Quality Control Inspectors on or before February 7, 1983.

This is a Severity Level IV violation (Supplement II).

Pursuant to the provisions of 10 CFR 2.201, Pacific Gas and Electric Company is hereby required to submit to this office within thirty days of the date of this notice, a written statement or explanation in reply, including: (1) the corrective steps which have been taken and the results achieved; (2) corrective steps which will be taken to avoid further items of noncompliance; and (3) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

MAR 29 1983

Date



D. F. Kirsch, Chief
Reactor Projects Section No. 3

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-275/83-08
50-323/83-07

Docket Nos. 50-275 and 50-323 License No. DPR-76 Construction
Permit No. CPPR-69

Licensee: Pacific Gas and Electric Company
P. O. Box 7442
San Francisco, California 94120

Facility Name: Diablo Canyon Units Nos. 1 and 2

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

Inspection conducted: February 28-March 4, 1983

Inspectors: G. H. Hernandez 3/24/83
G. H. Hernandez, Reactor Inspector Dated

W. J. Wagner 3/24/83
W. J. Wagner, Reactor Inspector Dated

Approved by: D. F. Kirsch 3/25/83
D. F. Kirsch, Chief, Reactor Projects Dated
Section No. 3

Summary:

Inspection during the period of February 28 - March 4, 1983
(Report Nos. 50-275/83-08 and 50-323/83-07)

Areas Inspected: Unannounced inspection by regional inspectors of construction and modification activities including preservice inspection, safety related pipe support and restraint systems, and steel structure and supports welding activities.

The inspection involved 64 inspection-hours by two NRC inspectors.

Results: Of the three areas inspected one item of noncompliance was identified in the area of structural steel welding activities (failure to perform safety related welding activities in accordance with quality procedures, paragraph 3.)

DETAILS

1. Individuals Contacted

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

- *R. D. Etzler, Project Superintendent
- *D. A. Rockwell, Assistant Project Superintendent
- *W. A. Cooley, Resident Electrical Engineer
- *J. Arnold, Resident Mechanical Engineer
- *F. M. Russell, Resident Civil Engineer
- *J. R. Bratton, Lead Quality Control Engineer
- *E. J. Macias, Resident Engineer
- *R. R. Lieber, Resident Engineer
- *C. M. Seward, Quality Assurance Engineer
- D. R. Bell, Quality Control Inspector
- J. J. Nystrom, Quality Control Inspector
- T. E. Pierce, Quality Control Inspector
- D. A. Gonzalez, Quality Control Inspector
- H. R. Zimmerman, Manager Inspector

b. Bechtel Corporation (Bechtel)

- *J. W. Shryock, Site Completion Manager
- *L. A. Dreisbach, Onsite Project Engineering Group/
Quality Assurance

c. H. P. Foley Company (Foley)

- *P. J. Bourque, Project Director
- *A. E. Moses, Project Manager

d. Pullman Power Products Corporation (Pullman)

- H. W. Karner, Quality Assurance/Quality Control Manager
- J. P. Watson, Welding Supervisor
- M. S. MacCrae, Training Officer
- J. Cunningham, Quality Control Inspector

*Denotes personnel attending the exit management meeting of March 4, 1983.

2. Plant Status

On March 2, 1983 the licensee announced a delay of fuel load for Unit 1. Fuel load had originally been scheduled for March 31, 1983 and has now been rescheduled for June 30, 1983. The licensee has revised the schedule due to structural analysis work requiring more time than originally estimated, increased scope of work, lower than expected production rates and an increase in modifications to the Unit 1 annulus steel. This increased work load has resulted in a corresponding increase in the total construction force. The total work force is estimated at about 4,000 employees.

3. Structural Steel Modifications - Unit 1 Fuel Handling BuildingVisual Examination of Welds

As a result of plant changes initiated by the verification program the licensee is currently in the process of making modifications to the Fuel Handling Building structural steel. A part of these modifications provide for the adding of stiffener plates at structural steel connections located along the S² (westside) and V¹ (eastside) lines of the Fuel Handling Building. During this inspection the inspector examined completed field welds on two connections to ascertain whether the welds met specified visual standards established by the current edition of the Structural Welding Code, AWS D1.1 and the applicable contractor procedure and specification requirements. The following connections at the 182' elevation of the Fuel Handling Building were examined and the following discrepancies noted.

a. Connection No. G at Column No. 14⁷

<u>Plate Nos.</u>	<u>Weld Nos.</u>	<u>Discrepancies</u>
(1) A005-2	11,12,13A,13B, 15,16,17,19,21 68	None
(2) A005-1	5,6,7A,7B,9,10 18,20,22,69	None
(3) C005-2	30,33,35,41	None
(4) C005-4	31,37,39,43	None
(5) D005-2	44,45,52,54, 60,61	45-no welder's stamp 52-no welder's stamp/no inspector's stamp 54-weld profile not in accord- ance with AWS D1.1 figure 3.6(C) - Insufficient throat 60-no welder's stamp/no inspector's stamp

(6) D005-4	46,47,56 58,62,63	56-Welder's stamp "B ⁶ " on weld/ No inspector's stamp 58-No welder's stamp 46-Welder's stamp "B ⁶ " on weld 62-Slag covering one-half of weld/ No welder's stamp/No inspector's stamp 47-No welder's stamp 63-Welder's stamp "B ⁶ " on weld
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b. Connection No. H at Column No. 15³

<u>Plate Nos.</u>	<u>Weld Nos.</u>	<u>Discrepancy</u>
(1) A005-2	11,12,13A,13B 15,16,17,19, 21,68	13A-Undersized 1/8"
(2) A005-1	5,6,7A,7B,9, 10,18,20,22,69	None
(3) C005-1	28,32,34,40	None
(4) C006-3	29,36,38,42	None
(5) C005-2	30,33,35,41	33-Weld profile not in accord- ance with AWS D1.1 figure 3.6(C) - Insufficient throat/Crater at weld termina- tion 35-Weld profile not in accord- ance with AWS D1.1 figure 3.6(C) - Insufficient throat/Crater at weld termina- tion
(6) C005-4	31,37,39,43	None

(7) D005-2	44,45,52,54, 60,61	54-Weld profile not in accordance with AWS D1.1 figure 3.6(C) - Insufficient throat
(8) D005-4	46,47,56,58, 62,63	None
(9) D005-1	50,51,53,55, 66,67	None
(10) D005-3	48,49,57,59, 64,65	57-Welder's stamp "G3" on weld

All welds examined had been inspected and accepted by H. P. Foley Quality Control Inspectors on or before February 7, 1983.

The above noted discrepancies are contrary to code and procedure requirements as follows:

The Howard P. Foley Quality Control Procedure for AWS D1.1 Welding, QCP-5A, Revision 8, references in paragraph 2.0 the latest edition of AWS D1.1 (the Structural Welding Code) as the applicable code for structural steel welding.

AWS D1.1-1982 in paragraph 3.6.1 states that, "The faces of fillet welds maybe slightly convex, flat, or slightly concave as shown in figures 3.6(A) and (B) with one of the unacceptable profiles shown in Figure 3.6(C), and in paragraph 8.15.1.3 that, "All craters are filled to the full cross section of the weld."

AWS D1.1-1982, "Commentary on Structural Welding-Steel, paragraph 6.5, "Inspection of Work and Records", states in part that, "Die stamping of welds is not recommended since die stamp marks may form sites for crack initiation."

The Howard P. Foley Quality Control Procedure for AWS D1.1 Welding, QCP-5A, Revision 8, states the following:

- paragraph 5.2, "Each welder shall be assigned a unique numbered and lettered identification stamp".
- paragraph 5.2.1, "Each welder shall stamp his identification number in the proximity of his weld, in sufficient quantity to effectively identify his work."
- paragraph 9.1, "Welds shall conform as closely as practical to design requirements and exposed faces of welds shall be reasonably smooth and regular."
- paragraph 11.1, "Each welding inspector shall be assigned a unique I.D. stamp."
- paragraph 11.1.1, "Each welding inspector will stamp in sufficient quantity to identify the accepted work."

- paragraph 11.5.1.4, "Fillet welds may be 1/16 inch undersized, providing that the undersized portion does not exceed 10% of the total length of the weld."
- paragraph 11.5.1.7, "The weld shall be clean and free of slag."

The failure to perform work in accordance with procedural or code requirements is considered an apparent item of noncompliance with 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings". (50-275/83-08/01)

In addition, the inspector noted that this item, when coupled with the weld stamp problem (see paragraph 4), appears to indicate a deficiency in the training program for welders and welding Quality Control Inspectors. The licensee acknowledged the inspector's concern.

4. Review of Quality Records

The inspector reviewed quality documentation, related to completed welds examined and identified in paragraph 3, for conformance to the applicable contractor procedure and specification requirements. During this review the licensee informed the inspector that a number of retired welder stamps were inadvertently issued to new welders. The issuance of retired welder stamps is contrary to QCP-5A which states in paragraph 5.2.2 that, "If a welder is no longer welding, his assigned stamp shall be placed in a dead file and shall not be reassigned to another welder." On March 3, 1983 the inspector found that a retired weld stamp had been reissued to a new welder on February 22, 1983. Discussions with contractor personnel indicated that they are aware of the magnitude of the welder stamp problem and have documented a number of cases related to misuse of assigned welder stamps, as well as issuance of retired stamps. Contractor personnel have been assigned to identify, document, and resolve the weld stamp situation. The licensee's results will be examined during a future inspection. This is a followup item. (50-275/323/83-08/02)

5. Welding Procedure Specifications - H. P. Foley

The inspector reviewed the Welding Procedure Specifications (WPS) referenced in H. P. Foley's QCP-5A, Revision 8, for conformance with the prequalified joint details specified in AWS D1.1-1982. This review determined that a number of the joint details were not in conformance with the joint details specified in the 1982 edition of the code. Discussions with PG&E personnel determined that a new revision to QCP-5A is currently under review and that the new revision will incorporate the changes to the joint details as specified in the 1982 edition of the code.

No items of noncompliance or deviations were identified.

6. Safety-Related Pipe Support and Restraint System-Pullmar

a. Observation of Welding Activities

The inspector observed in-process welding on three pipe supports (hanger numbers 55S-91A, 56S-71V and 235/145R) and on containment spray ring hanger 176/47R. Fit-up, cleanliness, weld identification, weld quality, proper use of a "traveler", and correct issue and use of welding electrodes were in compliance with applicable procedures and standards. Welders interviewed were knowledgeable of the joint detail and essential variables specified by the welding procedure specifications.

No items of noncompliance or deviations were identified.

b. Welder Qualification

The inspector reviewed the contractor's procedure for qualification of welders and welding operators for compliance with applicable code requirements. This procedure, ESD 516, provides a system for maintaining a continuous record of the qualification status of all welders. The welder's maintenance of qualification records were up-to-date and effectively utilized. The inspector reviewed the performance qualification records for those welders associated with the in-process welds examined during this inspection. The welders were qualified to weld under the applicable weld procedure specification (WPS). These weld procedures, WPS-7/8 and 15/16, and procedure qualifications records were examined by the inspector for compliance with ASME Section IX requirements.

No items of noncompliance or deviations were identified.

c. Visual Examination of Welds

The inspector visually examined completed welds on the following hangers to determine whether the welded structures conform to applicable code and project specifications.

<u>Hanger No.</u>	<u>Hanger No.</u>
1049/15-SL	2156-169
176-27R	2190-19
176-28R	41-25R

Characteristics examined at the weld joint were weld location, fillet weld size, appearance, and presence of surface defects. Visually, these welds appeared satisfactory.

No items of noncompliance or deviations were identified.

d. Welding Inspector Qualifications

The inspector reviewed the qualification records of four welding quality control inspectors authorized by the contractor to sign-off on process sheets. The inspectors' approval signifies that code and procedural requirements have been complied with, thus assuring a sound weld joint. The following qualifications were reviewed: education and training, knowledge of welding, inspection experience, and good vision. The welding inspectors appeared to be competent and have the necessary qualifications to make the inspections for the type of structures to be inspected.

No items of noncompliance or deviations were identified.

7. Management Meeting

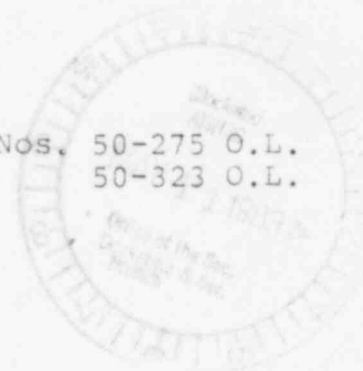
On March 4, 1983, the inspectors met with licensee representatives denoted in paragraph 1. The scope of the inspection, the observations, and the findings of the inspectors were discussed. The licensee acknowledged the concerns and the apparent item of noncompliance identified in this report.

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 O.L.
50-323 O.L.



CERTIFICATE OF SERVICE

I hereby certify that on this 10th day of May, 1983, I have served copies of the foregoing JOINT INTERVENORS' MOTION TO REOPEN THE RECORD ON THE ISSUE OF CONSTRUCTION QUALITY ASSURANCE, mailing them through the U.S. mails, first class, postage prepaid.

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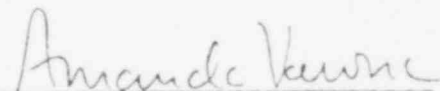
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