UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	
PACIFIC GAS AND ELECTRIC COMPANY	Docket Nos. 50-275 O.L. 50-323 O.L.
(Diablo Canyon Nuclear Power Plant, Units 1 and 2)	

MOTION FOR REVOCATION OF FACILITY OPERATING LICENSE OR, IN THE ALTERNATIVE, FOR CONTINUATION OF SUSPENSION

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I. INTRODUCTION

Pursuant to § 186(a) of the Atomic Energy Act, 42 U.S.C. § 2236(a), the SAN LUIS OBISPO MOTHERS FOR PEACE, SCENIC SHORELINE PRESERVATION CONFERENCE, INC., ECOLOGY ACTION CLUB, SANDRA SILVER, GORDON SILVER, ELIZABETH APPELBERG, and JOHN FORSTER ("Joint Intervenors") hereby move the Commission for an order revoking Facility License DPR-76, the suspended low power operating license for Diablo Canyon Nuclear Power Plant ("Diablo Canyon"), Unit 1, or, in the alternative, for an order

continuing the existing suspension of the license.[1/] This motion arises out of the recently discovered knowing and intentional failure of Pacific Gas and Electric Company ("PGandE"), licensee and owner of the facility, to disclose the findings of an independent audit revealing a major breakdown in the quality assurance program of one of PGandE's principal Diablo Canyon construction contractors, a breakdown occurring and continuing throughout the period when the plant was substantially constructed and completed.

Obtained by PGandE at least as early as 1978 but never disclosed to the NRC or to the public, the audit report by Nuclear Services Corporation ("NSC")[2/] documents that the quality assurance program of PGandE's principal piping contractor at Diablo Canyon was either nonexistent or riddled with deficiencies from 1971 through the time of the audit in

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1/ This motion is filed before the Commission for several reasons. First, the Commission suspended Facility License DPR-76 on November 19, 1981, and it is, therefore, the appropriate tribunal to resolve applications to reissue the license, revoke the license, or continue the suspension. Second, the Commission clearly has the authority to hear this motion based on its recognized supervisory authority over licensing matters. See, e.g., In the Matter of Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 515-17 (1977); In the Matter of Consolidated Edison of New York (Indian Point Station, Units 1, 2, and 3), CLI-75-8, NRCI 75-8, 173 (1975); In the Matter of U.S. Energy Research and Development Administration (Clinch River Breeder Reactor Project), CLI-76-13, NRCI 76-8, 67, 75-76 (1976); In the Matter of Consumers Power Company (Midland Plant, Units 1 and 2), CLI-73-38, RAI-73-12, 1084 (1973).

2/ Nuclear Services Corporation ("NSC") is now known as Quadrex. Its October 1977 audit report is attached hereto as Attachment 1.

late 1977. Inadequate control of welding, lack of a corrective action system, lack of design interface and controls, inadequate training and certification of welders, and even the falsification of records -- these NSC findings are only illustrative of the significance and breadth of the approximately 80 programmatic deficiencies described in the report, deficiences which necessarily cast serious doubt upon the quality of the actual construction performed under such a program.[3/]

In disregard of the obvious materiality of those findings to the construction -- indeed, the safety -- of Diablo Canyon, PGandE withheld the audit not only from the NRC Staff and the public, but from the Commission's own licensing boards then and now considering the adequacy of construction and construction quality assurance at Diablo Canyon. Instead, PGandE on several occasions offered sworn affidavits and testimony directly contrary to the findings documented by NSC in October 1977. Not even once, however, did PGandE's witnesses mention the NSC audit or its findings.

In withholding information so plainly material to contested safety questions, PGandE has knowingly engaged in conduct that threatens the health and safety of the public, in flagrant violation of its obligations under the Atomic Energy Act and the Commission's regulations. PGandE's nondisclosure of

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[3/] See discussion infra at 5-8.

the devastating audit findings and the concurrent testimony of PGandE's witnesses directly contrary to the audit's findings constitute material false statements in violation of § 186(a) of the Atomic Energy Act and 10 C.F.R. § 50.100, as well as a breach of its reporting obligations under 10 C.F.R. § 50.55(e).

Such irresponsible and unlawful conduct makes a mockery of the standards of candor required of a utility seeking authorization to operate a nuclear power plant, and it must not be sanctioned by the Commission. Particularly in light of PGandE's previously recognized failure to deal forthrightly with the Commission,[4/] this most recent failure to disclose material information warrants revocation of the suspended low power license, or, in the alternative, continuation of the suspension, pending an investigation of the circumstances surrounding the NSC audit and its implications for the adequacy of construction at Diablo Canyon.

II. BACKGROUND

A. NSC Audit and Findings

From August 22 through September 20, 1977, the Nuclear Services Corporation ("NSC") conducted an independent, internal

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4/ In the Matter of Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-82-1, 15 NRC __ (1982) (Notice of Violation issued based on PGandE material false statements regarding allegedly independent report); Notice of Violation (June 17, 1983) (failure to report apparent reactor coolant system minimum wall thickness violation); see also Commission Briefing, TR. 145-160 (January 25, 1982) (NRC Staff discussion of PGandE lack of candor).

audit of Pullman Power Products ("Pullman"), one of the principal construction contractors for Diablo Canyon since 1971.[5/] The primary purpose of the audit, undertaken at Pullman's request, was to assess the status, adequacy, and effectiveness of Pullman's Diablo Canyon Site Organization with respect to the quality assurance program as judged by the standards of Appendix B to 10 C.F.R. Part 50 and contract requirements. The time period covered by the audit was 1971 through 1977, the period during which the plant was substantially constructed and completed. NSC Audit, at 1-4.

NSC's audit report was formally issued in October 1977. As is evident from a reading of the report itself (attached hereto as Attachment 1), Pullman's failure to adhere to the broad range of quality assurance requirements was pervasive. The deficiencies were wide-ranging and significant and included numerous violations of each of the applicable 10 C.F.R. Part 50, Appendix B criteria. In approximately 35 pages of findings, NSC found quality assurance failures analogous in scope to those now conceded by PGandE to have characterized its deficient design quality assurance practices,

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[5/] Pullman Power Products or Pullman-Kellogg ("Pullman") entered into a contract with PGandE in 1970, began work at Diablo Canyon in 1971, and has continued at the site since that time. NSC Audit, at 2. Pullman has served as the principal piping contractor with responsibility not only for piping but for rupture restraints, pipe supports, and hangers. Hearing Transcript, at 443, 573-74 (July 20, 1983); PGandE's Answers to Joint Intervenors' Supplement to Motion to Reopen ("PGandE Response"), at 6 (September 21, 1983).

including failures in management assessment, design interface and control, training, certification, procedures, document control, inspections, corrective action, testing, storage and handling, verification of suppliers, identifying nonconformances, audits, and welding control.[6/] Notably, NSC explicitly found that, due to Pullman's inadequate control of the welding process, there could be "no confidence that welding done prior to early 1974 was performed in accordance with welding specification requirements." NSC Audit, at 22-25.

6/ The following summary listing of 23 of the 80 deficiencies found, with page citations to the audit report, is illustrative.

(a) lack of design interface and controls (pp. 7-8);

(b) failure (1) to establish or describe a QA program in compliance with Appendix B or ANSI N45.2 or (2) to amend the contract to require such compliance (p. 10);

(c) absence of management assessment (p. 10);

(d) inadequate training and indoctrination of inspectors and workers (p. 10);

(e) absence of design manual for preparation of isometrics and field drawings (p. 12);

(f) absence of procedure to verify approved supplier (p. 13);

(g) inadequate description of activities affecting quality (p. 14);

(h) uncontrolled alteration of documents (e.g., evidence of backdating of documents) (p. 16);

(i) absence of procedures barring alteration of records (p. 16);

On the basis of its approximately 135 individual findings set forth in section IV of the audit report, NSC concluded as follows:

> Prior to early 1974, there is little evidence available to verify the adequacy of the work performed. The available evidence indicates that only a rudimentary quality control program existed and that control over the production organization was minimal.

[Footnote 6 continued]

(j) inadequate instructions for identification of Class I pipe supports (p. 20);

(k) inadequate qualification and certification of inspection personnel (p. 21);

(l) inadequate control of the welding process (pp. 22-25);

(m) failure to control special processes (i.e., heat trading and cleaning);

(n) inadequate inspection processes (p. 27);

(o) unauditable inspection process (p. 27);

(p) inadequate control of testing (p. 29);

(q) inadequate implementation of calibration program;

(r) inadequate procedures for storage and handling (p. 32);

(s) inadequate inspection procedures (e.g., "Field Process Sheet") (p. 34);

(t) inadequate procedures for identifying nonconformances (p. 36);

(u) lack of corrective action system (p. 37);

(v) lack of procedures for filing, storing, and protecting quality assurance records (p. 38);

(w) inadequate and ineffectual audits and procedures (p. 39).

> From early 1974 to late 1974, there is evidence available to verify the adequacy of the work performed. The available evidence indicates that control was achieved of the materials control program and the welding control program.
>
> From late 1974 to the present, an increasing amount of documentation and records has been generated to verify the adequacy of the work performed. The available evidence demonstrates that an increasingly more stringent quality program has been placed in effect and increasingly greater control of the work effort has been achieved. However, the present program and controls still do not meet 10 C.F.R. 50, Appendix B requirements in those areas as delineated in Section IV of the audit report. (NSC Audit, at 42.) (Emphasis added.)

In short, NSC found a widespread breakdown in compliance with the Commission's Appendix B requirements from 1971 through the period of the audit in 1977. Because PGandE was and is the responsible applicant and licensee, the implications of that breakdown necessarily extended not only to the adequacy of the resulting construction work, but to the adequacy of PGandE's construction quality assurance program as a whole in that PGandE had clearly failed to control the activities of its principal piping contractor throughout the period of plant construction.

B. PGandE Failure to Disclose the NSC Audit

Rather than bring this highly critical review by a recognized and experienced auditor promptly to the attention of the NRC, PGandE elected not to mention the audit to the responsible government regulatory authorities or to the public.

In fact, at Diablo Canyon licensing hearings held in October 1977, PGandE's witness testified specifically about the PGandE quality assurance program and those of its contractors without any reference to the NSC audit findings, instead conveying the impression that PGandE and its contractors had instituted and were implementing approved quality assurance programs based on 10 C.F.R. Part 50, Appendix B and accepted industry guidelines.[7/]

Even after formal receipt of a copy of the audit from Pullman in early 1978, PGandE said nothing about it to the NRC, to the licensing board then considering the quality assurance issue, or to any other party to the proceeding. Repeatedly, PGandE opposed any attempt to reopen the quality assurance issue both before and after the licensing board's conclusion in July 1981 that the Diablo Canyon quality assurance programs for

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7/ The NSC audit report reflects that the review was conducted between August 27 and September 20, 1977. PGandE claims now that it could not have mentioned the NSC findings at the October 1977 hearings because "no definitive results were provided for us to review and evaluate prior to early 1978." PGandE Response, Affidavit of Russell Wischow, at 2 (emphasis added). No definition of "definitive results" has been offered by PGandE, however, leaving ambiguous the true extent of its knowledge of the NSC findings at the time of the 1977 hearings. Nonetheless, PGandE's failure to disclose the audit report immediately to the licensing board at whatever time the NSC report was issued has not been explained, presumably because there is no legitimate excuse for such failure. See In re Virginia Electric and Power Co. (North Anna Power Station, Units 1 and 2), 4 NCRI 480, CCH Nucl. Reg. Rptr., at 27,718 (1976); In re Duke Power Company (William B. McGuire Nuclear Power Station, Units 1 and 2), ALAB-143, 6 AEC 623, 625-26 (1973).

design and construction complied with Appendix B and were being implemented.[8/] In opposition to the Joint Intervenors' and Governor Deukmejian's recent motions to reopen the record on the issue of construction quality assurance, PGandE's witnesses have not only failed to mention the NSC findings, but have offered testimony directly contrary to it. For example, in support of PGandE's July 2, 1982 Response to the Joint Intervenors' Motion, the Diablo Canyon Station Manager attempted to distinguish PGandE's construction quality assurance program from its concededly deficient design quality assurance program as follows:

> For the construction and installation of the building, equipment, and apparatus at Diablo Canyon, PGandE required that each contractor performing work at Diablo Canyon have a quality assurance program qualified to PGandE, industry, and Nuclear Regulatory Commission (Atomic Energy Commission) quality assurance requirements. The contractor and any sub-tier contractor or supplier providing a service or material to be installed at Diablo Canyon adhered to these procedures in the performance of work at the site . . . . (Bain Affidavit, at 5.)
>
> * * *
>
> Throughout the construction of DCPP well-defined QA/QC controls were required of the construction contractors. Strict requirements existed from the beginning and were enforced. . . . (Id., at 14.) (Emphasis added.)[9/]

8/ Partial Initial Decision, at 11 (July 17, 1981).

9/ See also Transcript of Oral Argument on Motions to Reopen the Record, at 227 (April 14, 1983).

More recently, in testimony before the Appeal Board in late July 1983, PGandE's Diablo Canyon site quality assurance supervisor cited Pullman specifically as a shining example of the strict adherence of Diablo Canyon construction contractors to quality assurance requirements:

> The Pullman Power Product Company . . . they just perform a better job when it comes to quality assurance. . . . (Tr. 573-74.)
>
> * * *
>
> Well, if you want to put it on a scale, I don't know how to answer your question, other than the fact that if I put a quality program on the scale of 1 to 10 and 8 is acceptable, I would say Pullman is a 10, and Foley is at 9, if that's clear enough. (Tr. 605.) (Emphasis added.)

Not until September 1983 did PGandE acknowledge the existence of the NSC audit. Even then, however, it did so only because the Joint Intervenors, after reviewing a copy of the audit report received from an anonymous plant worker, had promptly served the report on all parties, the Appeal Board, and responsible NRC officials. And PGandE's response was, to put it mildly, remarkable: Rather than welcome the opportunity to justify its six year failure to release the NSC audit report, PGandE attempted once again to suppress it. It argued vehemently to the Appeal Board that the report should be ignored because it was "obviously . . . not 'new evidence' which has recently been generated." Further, it urged the Board to refuse consideration of the report because it had not been disclosed at

the July hearing, even though PGandE was the only party at the July hearing that was even aware of the audit's existence![10/]

Such a persistent lack of candor by a utility seeking authorization to operate a nuclear power plant is highly troublesome, to say the least. Indeed, all parties to this proceeding except PGandE have recognized that the NSC audit should have been disclosed by PGandE.[11/] That it failed to do so -- and even now refuses to acknowledge its error -- indicates PGandE's continuing unwillingness to recognize its obligation to

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10/ PGandE Response, at 3-4 (September 21, 1983). PGandE also contended that, following issuance of the audit report, it conducted its own review of the NSC audit and of Pullman's quality assurance program and unilaterally concluded that, with only minor exceptions, the extensive NSC findings were erroneous and Pullman's program was adequate. Id., Wischow Affidavit. In effect, PGandE simply arrogated to itself decision-making authority on a contested safety issue and concluded that the NSC audit was better left buried in PGandE's files. One cannot help wondering on how many other occasions PGandE has made a similar judgment and withheld significant safety information from the NRC, the licensing boards, and the public.

11/ According to Governor Deukmejian, the NSC audit "renews questions about PGandE's candor in dealing with the NRC . . . PGandE has kept from the commission and the parties significant evidence tending to show breakdowns in construction quality assurance at Diablo Canyon. . . ." Governor Deukmejian's Response to Joint Intervenors' Supplement to Motion to Reopen, at 5-8 (September 21, 1983).

Similarly, the NRC Staff has stated that it "shares the concern expressed by both the Joint Intervenors and Governor that this report was not brought to the Licensing Board's attention in a timely manner. . . ." NRC Staff's Response to Joint Intervenors' Supplement to Motion to Reopen, at 2 n.1 (October 6, 1983).

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be forthcoming with the Commission, even on matters critical to public safety.[12/] Not only is quality assurance one of the most important safety concerns in nuclear plant design and construction generally, it has been one of the principal contested issues in the Diablo Canyon proceeding since 1977. Without question, the NSC audit contained significant information relevant to a significant safety issue contested in this proceeding. Without question, therefore, PGandE had an obligation to disclose that information to the NRC promptly. Its failure to do so, however, and its subsequent contrary sworn testimony, is inexcusable and constitutes a clear violation of that obligation. Both to ensure that the safety issues raised by the NSC audit are addressed and to deter future similar conduct by PGandE, a strong and immediate response by the Commission is necessary. Facility License DPR-76 should be revoked pending a full investigation of this matter.

12/ Nor should PGandE's failure to disclose the NSC audit be viewed in isolation. In February 1982, this Commission cited PGandE for material false statements in violation of the Atomic Energy Act in connection with an allegedly independent report arising out of the IDVP. In the Matter of Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-82-1, 15 NRC __ (1982). In a January 29, 1982 meeting with the Commission, the NRC Director of the Office of Inspection and Enforcement stated that the incident demonstrated "something basically wrong with the leadership" of the utility (Tr. 145), and the Administrator of the NRC Region V office noted the recurring impression that PGandE is "not always free and forthcoming with information." (TR. 160.) More recently, on June 17, 1983, PGandE was cited by the NRC staff, and a Notice of Violation was issued, for failure to report an apparent minimum wall thickness violation in the reactor coolant system.

III. LEGAL BASIS FOR THE MOTION

The foregoing circumstances clearly demonstrate the propriety of the relief requested in this motion. Both the Atomic Energy Act and the decisions of the Commission establish the Commission's authority to revoke or suspend an operating license or to impose other appropriate license conditions where a licensee has made a material false statement. Section 186(a) of the Act, 42 U.S.C. § 2236(as), provides as follows:

> Any license may be revoked for any material false statement in the application or any statement of fact required under section 182, or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application, or for violation of, or failure to observe any of the terms and provisions of this Act or of any regulation of the Commission.

See also 10 C.F.R. § 50.100. The term "material false statement" has been defined by the Commission as a statement "capable of influencing a decision maker . . . ," and it may include an omission or failure to disclose material information. In re Virginia Electric and Power Co. (North Anna Power Station, Units 1 and 2), 4 N.C.R.I. 480, C.C.H. Nucl. Reg. Rptr. at 27,718-20 (1976).[13/] In particular, "at the hearing

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13/ As the Commission recognized in Virginia Electric and Power, supra, C.C.H. Nucl. Reg. Rptr., at 27,719-20:

stage, . . . where agency decision making is imminent, arguably relevant data must be promptly furnished if the agency is to perform its function." Id, at 27,718.14/

Each of these criteria has been satisfied in this case. The NSC audit findings were unquestionably capable of influencing the decisionmaker, and, nonetheless, PGandE intentionally elected not to disclose them to the NRC. Further, the nondisclosure occurred "at the hearing stage" not just once, but repeatedly from October 1977 through September 1983. By failing to disclose the NSC audit, PGandE deprived the agency decisionmaker of information relevant to the matters at issue and necessary to the performance of its function. Such nondisclosure is particularly significant in light of the contrary sworn testimony by PGandE witnesses during the six year period in question.

[Footnote 13 continued]

> We think . . . that "material false statement" may appropriately be read to insure that the Commission has access to true and full information so that it can perform its job. . . . [S]ilence regarding issues of major importance to licensing decisions is readily reached under the statutory phrase "material false statement."

14/ See also In re Georgia Power Co. (Alvin W. Vogtle Nuclear Power Plants, Units 1 and 2), ALAB-291, C.C.H. Nucl. Reg. Rptr., at 27,119 (1975) (parties to an uncompleted licensing proceeding must bring new information which is relevant and material to the matters being adjudicated to the attention of the tribunal presiding over the adjudication); In re TVA (Browns Ferry Nuclear Plant, Units 1 and 2), ALAB-677, (C.C.H. Nucl. Reg. Rptr., at 30,340 (1982) (Licensing Board must be advised of all significant developments).

PGandE's failure to disclose the NSC report also constitutes a violation of 10 C.F.R. § 50.55(e), which requires the holder of a construction permit to

> notify the Commission of each deficiency in design and construction, which, were it to remain uncorrected, could have adversely affected the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant, and which represents:
>
> (i) A significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B to this part; . . . .

Such notification must occur within 24 hours, and a written report is required within 30 days thereafter. 10 C.F.R. § 50.55(e)(2).

The breakdown in Pullman and PGandE quality assurance programs found by NSC -- including the finding that all welding prior to early 1974 is suspect -- was not disclosed for six years, and only then by a party other than PGandE. It is difficult to imagine more graphic evidence of a quality assurance breakdown than that reported by NSC in its October 1977 audit report. And yet, even after formal receipt of the information, PGandE unilaterally elected to discount the report without even so much as asking the NRC or any independent party for a second opinion on the accuracy of the NSC findings. Such conduct simply cannot be reconciled with the unequivocal requirement of prompt notice to the NRC.

Under these circumstances, and in light of PGandE's history of lack of candor in dealing with the Commission, strong

measures are necessary to ensure the safety of the facility, to restore public confidence, and to demonstrate clearly to PGandE a message that it has failed thus far to learn -- that a utility seeking authorization to operate a nuclear power plant must deal honestly and forthrightly with the NRC.[15/]

IV. CONCLUSION

Commissioner Gilinsky's comments in reference to PGandE in his February 1982 opinion in this proceeding are particularly pertinent here:

> It is troubling that a company which seeks permission to operate nuclear power plants should be so insensitive to its obligation to inform federal regulators and the public. . . . When we grant a utility the authority to operate a nuclear power plant we must be confident that its officials will be forthright with us. That is why the Commission's finding that PGandE had made a material false statement is so important. (Additional Views of Commissioner Gilinsky, at 5.)

Once again, PGandE has demonstrated its insensitivity to this issue. As a result, the question of the adequacy of construction at Diablo Canyon by Pullman and PGandE's other construction contractors, which should have been resolved during the licensing proceedings, remains an open issue. Further,

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15/ The Commission has recently recognized the "utmost importance" of appropriate actions to correct deficiencies in construction when it suspended construction at Zimmer Nuclear Power Station in light of significant construction quality assurance deficiencies. See In the Matter of Cincinnati Gas and Electric Company (Zimmer Nuclear Power Station), CLI-82-33, 15 NRC __ (1982).

PGandE's actions raise unanswered questions with respect to the utility's fitness to operate a nuclear facility: Why didn't PGandE voluntarily disclose the NSC audit report? Why should disclosure of so devastating a document depend solely on the integrity of an anonymous plant worker? And, at least as disturbing, what confidence can we now have that no other similarly adverse audits, studies, reports, or information indicating deficiencies in the design or construction of Diablo Canyon exist undisclosed, for reasons known only to PGandE? These questions must be answered before Diablo Canyon is licensed.

Accordingly, in light of the safety significance of the undisclosed NSC findings, the duration and continuing nature of the material false statements by PGandE, and the still unresolved questions regarding adequacy of construction at Diablo Canyon, the Joint Intervenors hereby move the Commission for an order revoking DPR-76 or, in the alternative, for an order continuing the existing suspension pending an investigation and resolution of the following issues:

(1) why did PGandE fail to disclose the NSC audit to the NRC and the public;

(2) what are the implications of the NSC audit findings for the adequacy of construction at Diablo Canyon;

(3) what other safety audits, reports, studies or similar information exist or have existed but have not been disclosed by PGandE to the NRC or the public, and what are the implications of those reports; and

(4) whether, in light of its continuing failure to disclose relevant safety information, PGandE can be expected to recognize and fulfill its obligations as a licensee of Diablo Canyon.

Such an order should be made immediately effective in order to ensure that this matter is handled expeditiously and in a manner consistent with protection of the public health and safety.

DATED: October 20, 1983

Respectfully submitted,

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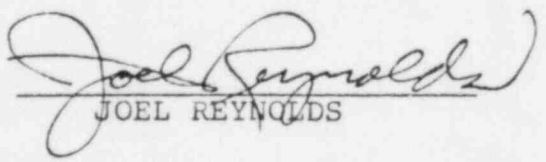
By 
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ATTACHMENT 1

NUCLEAR SERVICES CORPORATION
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TWX 910-590-2438

October 24, 1977

NSC-QAS-KEL-003
JW-77-072

Mr. Edward F. Gerwin
Chief Engineer/Quality Assurance Manager
Pullman Power Products
Post Office Box 1007
Williamsport, Pennsylvania 17701

Subject: Audit Report of Diablo Canyon Effort

Dear Mr. Gerwin:

The audit, conducted under your cognizance, of the Diablo Canyon work effort has been completed and is documented in the attached audit report.

Section VI, "Summary," of the audit report contains the audit team's overall evaluation and conclusions concerning the work performed at Diablo Canyon. To facilitate corrective actions, as much detail and as many specifics as possible have been included in the audit report, which accounts for the length of the report. If any additional details are required, do not hesitate to call me.

It is my understanding that information to confirm the disposition of the audit findings by Pullman Power Products and eventually by Pacific Gas and Electric Company will be transmitted to me. As we discussed, a copy of the letter transmitting the audit report from Pullman Power Products to Pacific Gas and Electric Company will be sufficient to confirm your disposition. The precise method of verifying Pacific Gas and Electric Company disposition was not defined, but you did commit to requesting that Pacific Gas and Electric Company send me a copy of any official communications concerning their actions relative to the audit. I trust that you have been able to obtain Pacific Gas and Electric Company's concurrence.

In behalf of the audit team, I would like to express my appreciation to all the Pullman Power Products personnel for their cooperation and to you for your personal attention and involvement in the audit.

Very truly yours,

Jack Weber

Jack Weber
Audit Team Leader

Attachment

AUDIT REPORT

PULLMAN POWER PRODUCTS

WORK SCOPE AT THE

DIABLO CANYON SITE

August 22 through September 20, 1977

I. INTRODUCTION

A. Audit Scope and Purpose

A quality assurance audit was performed on the Pullman Power Products work scope at the Diablo Canyon site. The purpose of the audit was to evaluate the performance of the Pullman Power Products Diablo Canyon Site Organization with respect to the Quality Program and contract requirements. The audit was performed under the cognizance of Mr. E. F. Gerwin, General Manager, Quality Assurance, Pullman Power Products and, as such, was an independent, internal audit of the Pullman Power Products Diablo Canyon work scope.

The scope of the audit included the following:

(1) The organizational arrangement and the independence of the quality organization.

(2) The qualifications and certifications of personnel performing the work.

(3) The Quality Assurance Program, including the procedures and instructions by which the work is accomplished.

(4) The implementation of the Quality Assurance Program.

(5) The systems by which deficiencies are found, reported, tracked, and corrected.

(6) The records and documentation system.

(7) The workmanship of the field-fabricated and installed items.

(8) The status, adequacy, and effectiveness of receiving inspection, warehousing, installation, welding, heat treating, NDE, installation inspection, testing, and records functions for installed

and erected piping, field-fabricated piping (≤ 2-inch diameter), piping supports, piping snubbers, piping restraints, weld rod, and material (excluding the Primary Coolant System) examined by nondestructive testing, as appropriate.

The audit was performed by identifying each system or program that is used to control the work effort and sampling those systems or programs until a conclusion could be reached concerning the adequacy or inadequacy of that system or program.

The Pullman Power Products effort at Diablo Canyon was initiated in 1971, based on the contractual agreement of May 1970 between Pullman Power Products and Pacific Gas and Electric Company.

During the time period of 1971 to the present, the requirements relative to the Pullman Power Products work scope have changed. The audit scope and purpose were to evaluate the Pullman Power Products work effort against the codes and standards in effect at the particular time that the work was being performed. When requirements are issued, there is always some room for interpretations concerning what is an acceptable method of satisfying these requirements. During the 1971 to 1974 time period, a number of ANSI standards were promulgated to define acceptable methods of satisfying 10 CFR 50, Appendix B. It is required that organizations revise their quality programs to satisfy present interpretations. In areas requiring interpretation, the quality of the work effort at Diablo Canyon was measured against the current ANSI standards and Regulatory Guides, accepted today as valid interpretations of regulatory requirements. The long time span and the specific time interval during which the work effort was conducted should be considered when reading this audit report.

B. Audit Team

The audit team consisted of the following Nuclear Services Corporation personnel:

Jack Weber, Audit Team Leader

G. J. Larsen

T. C. Newman (part-time)

G. W. Rowe

C. Audit Report

The audit report is divided into six parts: Section I, "Introduction"; Section II, "Audit Preparation"; Section III, "Entrance Interview"; Section IV, "Audit Findings"; Section V, "Exit Interview"; and Section VI, "Summary." Corrective actions will be determined by the appropriate Pullman Power Products personnel upon receipt and review of this audit report.

II. AUDIT PREPARATION

A series of meetings were held in which the following tentative schedule was established:

- Preparation of checksheets
- Receipt and review of Pullman Power Products Quality Program documents and contractual commitments to Pacific Gas and Electric Company
- Finalization of checksheets
- Entrance interview
- Audit of Organization, Personnel Qualification and Certification Program, Document Control, Nonconformance Program, Auditing Program
- Feedwater Systems, Unit 1 and Unit 2
- Main Steam System, Unit 1
- Chemical and Volume Control System, Unit 2
- Residual Heat Removal System, Unit 1
- Safety Inspection System, Unit 1
- Containment Spray System, Unit 1
- Component Cooling Water System, Unit 1

The schedule was changed to meet the progress and findings of the audit, but the full scope of the audit was achieved.

III. ENTRANCE INTERVIEW

An entrance interview was held August 16, 1977, at the Diablo Canyon site to introduce the audit team. In attendance at the entrance interview were:

Jerry Arnold	Pacific Gas & Electric Co.	Diablo Canyon Site Quality Assurance Coordination
Al Eck	Pullman Power Products	Quality Engineer, Central Staff
Rick Etzler	Pacific Gas & Electric Co.	Lead Mechanical Engineer
Gerry Larsen	Nuclear Services Corporation	Auditor
Bill Rowe	Nuclear Services Corporation	Auditor
Pete Runyan	Pullman Power Products	Field Quality Assurance Manager
John Ryan	Pullman Power Products	Resident Construction Manager
Mike Tressler	Pacific Gas & Electric Co.	Station Superintendent
Jack Weber	Nuclear Services Corporation	Audit Team Leader

During the entrance interview, a discussion was held of the progress and problems associated with the Pullman Power Products effort and the present status of the work effort. The scope and schedule of the audit were discussed, and agreement was reached to perform the audit in accordance with the schedule presented in Section II above.

Mr. J. P. Runyan, Field Quality Assurance Manager, Pullman Power Products, and his staff were designated as the audit team contacts.

IV. AUDIT FINDINGS

The audit findings are divided into the 18 sections consistent with 10 CFR 50, Appendix B. The audit findings are given to present the status of the program and, therefore, include both the acceptable and unacceptable areas detected during the audit.

Criterion I. Organization

1. A current organizational chart does exist.

2. Procedures KFP-1 and KFPS-1 do describe the quality organization, as well as some of the functional responsibilities of the quality organization.

3. The Field Quality Assurance Organization has performed functions other than those described in KFP-1 and KFPS-1; and some functions were outside the quality responsibility, i.e., writing and approving Engineering Specifications, performing welding engineering functions, approving engineering changes. These activities raise the question of the qualification of Quality Assurance personnel to perform these functions and the problem of requiring the Field Quality Assurance Organization to audit its own performance.

4. Procedures KFP-4, KFPS-4, KFP-6, KFPS-5, KFP-8, KFPS-7, KFP-9, and KFPS-8 do describe some of the responsibilities of the Field Engineering Organization. The responsibilities of the other Field Construction Organizations are not described, nor are the full responsibilities of the Field Engineering Organization described.

5. The descriptions of individual position responsibilities are inadequate. Some elements of position descriptions exist in the KFP and KFPS procedures, and job descriptions exist for inspection and inspection technician positions. No position descriptions exist for any of the upper-level site personnel.

6. The description and controls of the interfacial relationship between Pullman Power Products and Pacific Gas and Electric Company are inadequate. The contract and some Engineering Specifications do describe some interfaces and mechanisms. However, for the greatest scope of the work effort, there is little to describe how the interface will be managed and controlled. Some of the activities that

require interface control are hydrostatic testing, nonconformance reporting, meetings, work on pipe rupture restraints, work on hangers, document control, reporting of deficiencies, responses to Pacific Gas and Electric Company audits, interfaces with other Pacific Gas and Electric Company contractors that impact Pullman Power Products work, etc.

7. The description and the controls of the interfacial relationship between Pullman Power Products Field Organization and the other Pullman Power Products organizations involved in the Diablo Canyon effort are inadequate. The Quality Assurance Manual does describe some quality interfaces between the Field and Corporate Offices. However, there are no requirements for periodic reporting from the Field Quality Assurance Organization to the Corporate Quality Assurance Organization; there are no requirements for an upper-management review of corrective action reports, nonconformance reports, and personnel qualifications; the interface between the Field Organization and the Paramount shop is not described; the interface between the Resident Construction Manager and the Corporate Construction Manager is not described; the interface between Field Quality Assurance and Corporate Quality Assurance is not described with respect to field purchases and Corporate Quality Assurance auditing of those suppliers.

8. The description and the controls of the interfacial relationship between the Pullman Power Products Field Quality Assurance Organization and the other Pullman Power Products Field Organizations are inadequate. The Quality Assurance Manual and many of the Engineering Specifications describe interfaces and mechanisms. However, the interfaces relative to the construction and engineering efforts in regard to drawings approval; review of isometric, hangers, and restraint document packages; welders logs; and control of the welding process are not described.

9. The stop work authority for the Field Quality Assurance Organization is not adequate. Procedure ESD-240 does describe the stop work authority for Hold Tags, but there are no mechanisms described or authority addressed for the circumstances when the Construction Organization elects to proceed through a Hold Tag stop.

10. The Field Quality Assurance Organization does report to a sufficiently high level of management.

Criterion II. Program

1. The contract between Pullman Power Products and Pacific Gas and Electric Company was signed in May 1970, prior to the enforcement of 10 CFR 50, Appendix B. The contract did contain certain quality aspects that were requirements for the Pullman Power Products work effort. Work was not initiated on the Diablo Canyon site until late 1971, when Appendix B had become a requirement [Appendix B was added to 10 CFR 50 on June 17, 1970, effective July 27, 1970 (35 FR 10498), and amended September 11, 1971, effective October 11, 1971 (36 FR 18301)]. Even though the contract was not amended by Pacific Gas and Electric Company to include Appendix B as a requirement, Pullman Power Products was obligated to conform to Appendix B requirements; and the total quality program was evaluated against Appendix B and ANSI N45.2. While a written Quality Assurance Program exists, the program does not meet the requirements of 10 CFR 50, Appendix B or ANSI N45.2. The specific inadequacies of the program are described throughout the findings.

2. There is no description of the overall Quality Assurance Program. Special Quality Assurance Instructions are not described; the relationship and purposes of the KFPS, KFP, and ESD procedures are not described; the Pipe Support Quality Assurance Manual is not described; and the relationship of the Pipe Support Quality Assurance Manual to the balance of the Quality Assurance Program is not documented.

3. Procedures KFP-1 and KFPS-1 do provide a broad and generalized description of the scope and applicability of the Quality Assurance Program. These procedures also reference the contract between Pullman Power Products and Pacific Gas and Electric Company. However, the total scope and applicability of the Quality Assurance Program are not adequately described. The efforts relative to pipe rupture restraints, receiving and control of materials and components other than Pullman Power Products-procured, and the work associated with anchor bolts are not adequately described.

4. There is no evidence that upper management has performed scheduled reviews of nonconformance reports, personnel qualifications, and corrective actions.

5. There is evidence that upper management has performed reviews of audit reports generated by Pullman Power Products and Pacific Gas and Electric Company.

6. The indoctrination and training program requirements for personnel involved in inspection activities are adequate. Procedures KFP-2, KFP-3, KFPS-2, and KFPS-3 require training of NDE personnel; Procedure ESD-237 specifies a training program for the NDE personnel; Procedure ESD-237 also describes a training program for Quality Assurance Field Inspectors.

7. The indoctrination and training program requirements for personnel involved in quality-related activities are inadequate. There is no requirement for indoctrination and training of welders, foremen, engineering personnel, warehousing personnel, etc.

8. There is no evidence that personnel have been trained to assure their familiarity with the procedures they are responsible for implementing, except for welders, who have been trained and qualified to specific weld procedures.

Criterion III. Design Control

1. There is no design manual for the preparation of isometrics and field fabrication drawings.

2. Procedure KFPS-4 provides adequate control of the pipe support design effort.

3. Procedure KFP-4 requires that the Chief Field Engineer and the Field Quality Assurance/Quality Control Manager review field changes to Pacific Gas and Electric Company-approved drawings and specifications for ASME Code compliance. No written procedure for this review exists.

4. A mechanism does exist for checking and reviewing Pullman Power Products drawings. However, this mechanism is not described in a written procedure. Documentation of the implementation of this informal procedure does exist.

5. The isometrics and field fabrication drawings do indicate the classification of systems.

6. Procedure ESD-205 does contain a classification of systems and the requirements for each classification.

7. The changes to isometric drawings and field fabrication drawings are indicated on the documents, as well as the reason for the change. Procedure KFP-9 establishes a mechanism to permit tracking of all revisions, i.e., the Chief Field Engineer is required to maintain a copy of all voided drawings.

8. Procedure KFPS-8 requires the Chief Field Support Engineer to assure that all supports are fabricated to the latest drawing revision. No mechanism exists to comply with this requirement.

Criterion IV. Procurement Document Control

1. Procedures KFP-6 and KFPS-5 adequately describe the responsibilities associated with field purchase order processing.

2. Procedure ESD-226 adequately describes the quality requirements for purchase specifications of the usual Pullman Power Products scope of purchased materials.

3. Procedures KFP-6 and KFPS-5 do not require that the purchase order state that Pullman Power Products is given the right to audit the subcontractor shop.

4. No written procedure permits verification of the selected supplier as one identified on the Pullman Power Products corporate-approved vendors list.

5. There is no mechanism by which Pullman Power Products Corporate is informed of the procurement of safety-related parts, components, equipment, and material to assure that the selected supplier is placed on the Corporate audit schedule.

Criterion V. Instructions, Procedures, and Drawings

1. There is no requirement that activities affecting quality shall be prescribed by documented instructions, procedures, and drawings.

2. Many activities affecting quality are not described in procedures. Among those activities are: hanger package review, pre-heating for welding, use of Note-O-Grams, use of Rejection Notices, and maintenance of Field Quality Inspector Daily Logs.

3. Many activities affecting quality are insufficiently described in procedures. Among those activities are: isometric package review, post-welding heat treatment, nonconformance reporting, Ninety-Day Welders' Logs and Weekly Qualified-Welders Lists, and auditing.

4. The present procedures are generally inadequate for providing direction to those performing the work. The procedures do not follow the flow of the work; many procedures are very long (over 10 pages); insufficient information is given; important information is not provided or referenced in the procedure.

Criterion VI. Document Control

1. Procedures KFP-9 and KFPS-8 are adequate for field drawing control, and Procedure ESD-253 is adequate for pipe-support drawing control.

2. Procedures KFP-17 and KFPS-15 are adequate for control of the KFP and KFPS procedures and are appropriately implemented.

3. There is no procedure for control of ESD procedures.

4. There is no procedure for control of Special Quality Assurance Instructions.

5. The Pullman Power Products review of completed packages relative to hangers and pipe restraints is not detailed in a procedure, nor is ESD-254 complete as to what is actually done for the isometric package. Procedure ESD-254 does describe some aspects of "Piping System Documentation Review."

6. The Pullman Power Products log, Drawing Control Index (KFP-9 and KFPS-8), is maintained in a nonpermanent manner. The log is filled out in pencil; and when the number of revisions exceeds the available space, the early revisions are erased to accommodate the new revision.

7. No mechanism assures that the Pacific Gas and Electric Company drawings being used as the reference drawings are the latest-issued revision. Audits are frequently performed to determine that Pullman Power Products has the latest Pacific Gas and Electric Company drawings. However, the audit mechanism is not satisfactory when it is the only mechanism.

8. There is no Weld Rod Requisition for one of the welders who participated in FW-345 of isometric 04-500-139.

9. There is evidence that documents have been backdated and changed to meet requirements without any substantiation of the information.

- For Isometric 2-14-47: The Process Sheet was changed to show the completion of FW-192 on April 10 and April 11, 1974, approximately 19 months after the work was done.

- Isometric 2-14-8: FW-1673 was performed to Revision 2 of the isometric, which did not show FW-1673. Revision 3 of the isometric, which included the FW-1673, was generated approximately one week after completion of the weld. It is therefore concluded that FW-1673 was performed without the normal controls of a Process Sheet, a weld procedure call-out, and a call-out of NDE requirements.

- Isometric 2-14-53: FW-247 was completed February 20, 1975. Approximately December 1, 1975, the visual acceptance was signed off and backdated; and the Weld Rod Requisition was changed to show that more than the original quantity of one had been burned.

- Isometric 2-14-59: FW-268 was completed February 5, 1975. On December 2, 1975, the entry on the Process Sheet for removal of dams was signed off and backdated. There is no proof that the dams had been removed.

- Isometric 2-26-417: FW-144, -145, -196. and -197 were completed on May 14, 1976. The Weld Rod Requisition had been altered to add FW-197. However, the Weld Rod Requisition shows that 14 rods had been burned, which seems improbable for the four welds that were supposedly welded.

10. No procedure or requirement prohibits the changing or alteration of the records and documents that are necessary to track the work. Field Process Sheets, Weld Rod Requisitions, inspection records, etc., should not be changed or should be changed only by Quality Assurance supervisory personnel and then signed and dated.

11. Procedures KFP-14, KFPS-12, ESD-239, and ESD-254 are adequate instructions to assure that the correct documentation has been assembled and the system is ready for turnover.

Criterion VII. Control of Purchased Material, Equipment, and Services

1. The interface between the Pullman Power Products Field Organization and the Pullman Power Products Corporate Organization relative to selection and monitoring of suppliers' fulfilling field purchase requisitions is inadequate.

2. Procedures KFP-7, KFPS-6, ESD-217, ESD-226, and ESD-261 are adequate for the performance of receiving inspection.

Criterion VIII. Identification and Control of Materials, Parts, and Components

1. Identification and control of piping and valves are adequately specified by Procedures ESD-200 and ESD-201.

2. Identification and control of weld material are adequately specified by Procedures KFP-12, KFPS-11, and ESD-202.

3. Identification and control of backing gas dams are adequately specified by Procedure ESD-214.

4. Procedures KFP-8 and KFPS-7 are adequate for specifying that the identification of parts and components is to be recorded on the Field Process Sheet. The implementation of this procedure is adequate.

5. The isometric drawings and field fabrication drawings are the major documents for recording the identification of the parts, spools, and components. While there is no procedural requirement, this mechanism has been followed and is an excellent technique.

6. Identification of welds and welders is adequately described in Procedures ESD-203, -204, -221, and -243.

7. Proper methods of marking are specified in Procedures ESD-200, -201, -202, -203, -204, -221, -223, and -243.

8. Material control techniques for temporary pipe attachments are adequately described in Procedure ESD-232.

9. Procedure ESD-248 adequately describes controls for the repair of installed valves and for valve parts control.

10. Adequate control of snubbers, plate, and other components is achieved by using Procedures ESD-200, ESD-201, KFP-8, KFPS-7, and the practices associated with field drawing preparation. However, no procedures specifically address these items.

11. Procedure KFP-20 provides an adequate mechanism to control nuts, bolts, etc.

12. Procedure ESD-223 does not give adequate instructions for the identification and control of Class I Pipe Supports.

13. Procedure ESD-228 does provide adequate guidance for the marking of tools used in grinding stainless and carbon steel welds.

Criterion IX. Special Processes

1. Nondestructive examination has been properly specified as a special process. Procedures KFP-3, KFPS-3, ESD-235, and ESD-256 adequately specify requirements for NDE personnel.

2. The requirements for Field Quality Assurance Inspectors are adequately specified in Procedures ESD-237 and ESD-256.

3. The qualification and certification program for NDE and inspection personnel has been inadequate. The records of the following personnel were examined: D. R. Geske, T. L. Koch, J. E. Cawelti, G. P. Keeler, K. E. Beck, L. Glass, W. R. Johnson, E. Stanton, C. B. Athay, R. G. Sears, D. S. Tutko, J. N. Shiromizu, V. J. Casey, J. A. Brasher, L. F. Myrick. S. R. Stanley, H. Guest, D. E. Bentley, R. D. Kincade, K. D. Guy, J. R. Bowlby, E. R. Jennings, A. L. Newton, C. C. Lenzi, J. J. Sisk, L. G. Thomas, A. A. Conques, and R. L. Marks. In virtually all cases, the individuals began performing their duties without fulfilling the specified requirements. The most prevalent discrepancies are: not completing the required training, not having proof of previous experience, insufficient time as Level I, unsigned tests, and insufficient background and experience.

4. NDE procedure qualification is adequately described in Procedures KFP-2 and KFPS-2 as being the responsibility of the Manager of Quality Assurance, Williamsport Headquarters.

5. Welding has been properly specified as a special process.

6. Welding procedure qualifications are adequately described in Procedure KFP-15 as being the responsibility of the Welding Engineer (Williamsport).

7. Procedures KFP-15, KFPS-13, and ESD-216 are adequate for specifying welder qualifications.

8. The certification of the following welders, by weld symbol, was examined and found acceptable: U, AN, IH, PO, VD, QZ, HY, PD, JL, ET, HL, AY, MO, TQ, IQ, PG, KP, XC, FC, and ZC.

9. The certification of welder U was not signed.

10. A number of procedures provide mechanisms for control of the welding process: ESD-203, -204, -215, -219, -221, -225, -227, -242, and -243. However, the control of the welding process has been inadequate as follows:

- Records of welder qualifications prior to 1972 are not available.

- The Ninety-Day Welders' Log was not maintained from August 1972 to December 1972. There is no Weekly Qualified-Welders List for that time period to substantiate that the welders were actually qualified.

- The Ninety-Day Welders' Log is not sufficiently detailed to determine if the welder is qualified to perform certain procedures. The Ninety-Day Welders' Log has been revised a number of times, and the detail has improved with each revision. Previous to the latest revision (November 1974), the log was very poor in giving precise information relative to procedure and thickness ranges to which the welder was qualified.

- No procedure states what the Field Quality Assurance Inspector uses as the primary means to determine welder qualification, the Ninety-Day Welders' Log, the Weekly Qualified-Welders List, or the Welder's Qualification Card.

- No procedure specifies who is responsible for the Ninety-Day Welders' Log, the Weekly Qualified-Welders List, or the Welder's Qualification Card; how the information is obtained; how the logs are used; to whom they are distributed; etc.

- Procedure KFPS-13 differs from KFP-15 in that it does not permit a six-month extension of welder qualifications if the welder has been actively welding on some other welding process. Procedure KFPS-13 requires the welder to use the specific welding process within a three-month period or be requalified. There is no evidence of adherence to this requirement for pipe support welding.

- Welder BF (W. Adair, 251) performed welding on FW-70, -72, -73, -76, -77, -78, -100B, -132, and -133 in isometric package 21-7 and FW-88, -90, -91, -92, -134, -135, and -160B in isometric package 21-8. This welder was not qualified for the thickness range; and the welds were reported on DRs 2536, 2538, 2539, and 2899. In accordance with Pacific Gas and Electric Company disposition, some of the welds were radiographed and found acceptable; Welder BF was qualified to the thickness range; and all the welds in question were accepted. This disposition is not permitted by B31.1, B31.7, and ASME, Section IX, which all specify that the welder must be qualified prior to making production welds.

- Procedure ESD-219 requires random sampling of inprocess welding, with the sampling to be noted on the Field Process Sheets. In examining Field Process Sheets, it is obvious that the sampling by the area inspectors was not performed.

- Procedure ESD-219 requires periodic auditing by the Welding Auditor. These audits were not performed until November 5, 1973; and Pullman Power Products was not in compliance with this procedure for approximately 23 months.

- Procedure ESD-219 requires monitoring stainless steel welds for ferrite control. However, the Severin Gauges were not on site until the beginning of 1973; and Pullman Power Products was not in compliance with this procedure for approximately 12 months.

- Hangers are not welded in accordance with Pacific Gas and Electric Company requirements. Hangers 2023-1V and 2039-2V are two examples of a number of hangers observed that are welded to the structural steel on the wrong side of the bracket.

- The interface of welding to other suppliers' parts and components is not clear. Welding is done to join Westinghouse and Paramount parts and components. The necessity for addressing impact property requirements for those weldments is not clear; in addition, the requirements for addressing impact property requirements for Pullman Power Products field welds are not clear. If impact properties are necessary, the acceptability of each weld that has been repaired and subjected to more than one stress relief is indeterminate because of the time at temperature limitations within the qualified weld procedure.

- Some welders do not receive sufficient training. Welders, fabricating the pipe rupture restraints within the containment, are welding heavy plate. While these welders are qualified by virtue of welding heavy wall pipe, the techniques are different. The welders who were already qualified to heavy wall pipe were not given additional training on plate.

- There is no procedure for the preheating of weld joints.

- The initial results of the welding auditing (from November 5, 1973, to February 1974) indicate that the following problems existed:
  - The welders did not understand shielding and purging.
  - Tempil sticks were not used.
  - Amperages were not within procedure limits (mainly root

welds and tack welds.

- Weld procedures were not available, and many welders did not know where to obtain them.

- The oxygen analyzer was not available or not operative. Also, the time vs flow rate alternate technique was not used.

- Oven rod temperature control was not monitored by the welders.

- Many welders did not understand their duties and responsibilities.

Based on a review of the Pullman Power Products welding audit reports and the frequency of the above-noted problem areas, there is no confidence that welding done prior to early 1974 was performed in accordance with welding specification requirements.

11. Welding procedures for carbon steel welding require preheat and interpass temperatures for material that has a carbon content in excess of 0.30 percent and a thickness of one inch or more. There is no mechanism by which the welder can determine carbon content.

12. Procedure ESD-221 does provide adequate guidance on weld repairs.

13. Heat treating has been identified as a special process in the Pacific Gas and Electric Company contract (as well as in Appendix B), but it has not been controlled as a special process by Pullman Power Products.

14. Procedures KFP-13 and ESD-218 provide controls of the post-weld heat treatment process. The implementation of Procedure ESD-218 is acceptable.

15. Cleaning has not been identified as a special process.

16. Procedures ESD-220, -224, -238, -242, -252, -258, -259, and -261 provide adequate guidance in cleaning and cleanliness of the various materials, parts, and components.

17. Procedure ESD-231 provides some guidance on hot and cold bending of small bore piping. The guidance is considered insufficient to assure that the bending is done properly to avoid high stresses and thinning of the wall.

18. Procedure ESD-238 provides adequate instruction in torquing of bolting for pipe flanges.

19. Procedure ESD-259 provides adequate instruction for installing Grinnell Snubbers.

20. Procedure ESD-224 provides excellent instruction for assembly and torquing of installed valves.

21. Procedure ESD-260 provides adequate instruction for installation of Williams Rock Bolts.

22. Procedure ESD-230 provides good instructions for entering an installed line.

Criterion X. Inspection

1. Procedures KFP-5, -8, and -14 thoroughly describe the interface between Pullman Power Products and the Authorized Inspector.

2. Procedures KFP-8 and KFPS-7 provide the requirements for the Field Process Sheet, which specifies inspection points and inspector sign-off.

3. The Field Process Sheet references procedures to which the work and the inspections will be performed.

4. The inspection procedures are detailed in Procedures ESD-206, -207, -208, -209, -210, -211, -215, -219, -225, -233, -234, -236, -241, -243, -244, -249, -250, -251, -255, -259, and -260. These procedures are, in general, broad descriptions of the inspection process for the total range of the work scope and are adequate for that purpose.

5. For all inspection processes, there is no mechanism to provide the inspector the particular characteristic to be inspected; the particular acceptance criteria; the particular methods and equipment to be used; and provisions for recording results, other than acceptance for the particular inspection being made. The exceptions to this statement are radiography, where the reader sheet allows the recording of results, and those procedures that specify the use of particular equipment (such as some of the ultrasonic procedures).

6. The inspection process is generally not auditable. The practice of exhibiting an acceptance signature only does not permit auditing to determine if the individual characteristics were examined, the correct criteria were used for acceptance, and the correct specific measuring devices were used.

7. A large number of welds in Unit 2, System 14 (FW-110, -111, and -112 in isometric package 2-14-31 are examples) were accepted for

visual examination and thereafter accepted based on surface NDE inspection (MT or PT). Visual examination of those welds indicates that the surface is not suitable for the performance of surface NDE inspection.

8. For FW-110 (isometric package 2-14-31), the Process Sheet indicates that MT was performed; however, the inspection sheet for PT shows that weld number, and the inspection sheet for MT does not show that weld number.

9. FW-83 (isometric package 1-10-9) was repaired in accordance with a valid Process Sheet. The radiograph of FW-83 does not exhibit the required RI symbol, but RI was inked onto the radiograph. There is a surface defect that is questionable for acceptance to visual standards.

10. Isometric package 1-03-1 has a step that requires a Pullman Power Products inspector sign-off. This requirement was removed, and the step was accepted by a Pacific Gas and Electric Company employee.

Criterion XI. Test Control

1. Procedure ESD-229 adequately defines the methods and inspections relative to performing hydrostatic tests.

2. There is no description of the responsibilities of Pacific Gas and Electric Company or of the Pullman Power Products/Pacific Gas and Electric Company interface relative to hydrostatic testing.

3. Procedure ESD-229 is not adequate for describing the flow and authorities relative to the individual hydrostatic test procedures to be performed.

4. Hydrostatic test packages 7-2, 7-2A, 8-12, 9-12, 106, 106A, 106B, and 64 were examined and found acceptable.

5. The B31.1 and B31.7 Codes require that all piping be leak-tested, where practicable. Pullman Power Products is only leak-testing Class A and B piping and that Class C piping specified by Pacific Gas and Electric Company. Classes D, E special, and E piping is not being leak-tested. A letter from Pacific Cas and Electric Company (dated January 13, 1976) does exist, which states that Pacific Gas and Electric Company will assume responsibility for the leak-testing of Class C piping. There is concern that Pullman Power Products is not discharging its contractual obligations (that specify compliance to B31.1 and B31.7) by not performing piping leak-testing to Code requirements for Classes C, D, E special, and E piping systems and, as a result, may be legally vulnerable.

Criterion XII. Measuring and Test Equipment

1. Procedures KFP-11, KFPS-10, and ESD-213 describe an adequate calibration program.

2. The calibration program did not require recalibration of thermocouples until June 16, 1976. Therefore, there is no assurance of the accuracy of thermocouples used for pre- and post-welding heat treatment prior to June 16, 1976. Newly purchased thermocouples were required to be calibrated by the manufacturer. However, the manufacturer's calibration does not assure that the thermocouples have not been damaged during handling and shipping.

3. The calibration program has not been adequately implemented.
   - Paragraph 11.5 of Procedure KFP-11 and Paragraph 10.5 of Procedure KFPS-10 require reinspection of materials and components if the measuring and test equipment is found to be out-of-calibration. Except for hydrostatic testing and heat treating, the identity of measuring and test equipment is not related to the inspections performed.

   - Procedure ESD-213 does not contain a mechanism to report out-of-calibration measuring and test equipment to Pullman Power Products. Some forms used by the calibration subcontractors only contain provisions for attesting to calibrating the equipment to appropriate standards and have no provisions for recording the actual values obtained.

   - The calibration records of recorders were confused by having two recorders identified on one record, and the acceptability of the records could not be determined.

   - Severin Gauges 2947 and 2971 were received on the site in January 1973. Initial calibration was August 29, 1973; and the next calibration was November 19, 1974, for gauge 2947 and January 23,

1975, for gauge 2971. Procedure ESD-213 requires annual calibration.

- Magnetic Particle Test Equipment Y-6 has no documentation to verify calibration.

- There is no documentation available to verify calibration of "Tong Test" ampmeters.

- "Tong Test" ampmeter TT2527403 was out of calibration for the period December 12, 1976, to January 31, 1977. No DR has been written against that instrument.

- Storage requirements for instruments are not specified.

Criterion XIII. Handling, Storage, and Shipping

1. Procedures ESD-202, -215, -217, -222, -223, -240, -259, and -261 provide some information relative to handling and storage of materials, parts, and components for the total scope of the Pullman Power Products effort.

2. Procedures for storage are generally inadequate. Procedures ESD-222, "Control Valves," and ESD-202, "Weld Material Withdrawal and Control," are specific and adequate. Procedure ESD-215, "Visual Inspection," provides some guidance on storage. There is very little information relative to how specific items are to be stored or the delineation of storage areas relative to the protection each area provides.

3. Procedure ESD-240 requires a segregated storage area for "scrap" material, and Procedure ESD-215 requires separate areas for material with Hold Tags and for P1 and P8 material separation. These procedures are adequate. However, they do not relay much information on how these segregated areas are to be established and maintained segregated.

4. There are no procedures or manufacturers' instructions for the storage of flow indicators and strainers, which were stored in the Pullman Power Products storage area.

5. Handling procedures do not exist; and the only handling instructions are contained in ESD-222 and a number of other procedures, which contain a caution against the use of carbon steel in handling stainless steel. Procedure ESD-239 has excellent detail as to the handling of Grinnell Snubbers during installation. However, Procedure ESD-259 was issued January 27, 1977; and there is no assurance that materials, parts, and components were properly handled during the period prior to January 27, 1977, when most of the installation activities were occurring.

6. The present storage areas were found to be in excellent condition, with areas clearly defined, materials supported on adequate dunnage, and openings capped.

7. Procedures KFP-19, KFPS-17, and ESD-222 provide for an adequate storage surveillance program. Prior to October 31, 1973, the surveillance was performed using a checksheet that contained the storage requirements; after October 31, 1973, the checksheet was changed so that the storage requirements were not listed. While the surveillance program appears adequate, the checksheet used after October 31, 1973, does not appear adequate.

Criterion XIV. Inspection, Test, and Operating Status

1. The major mechanism that exhibits the status of the work is the Field Process Sheet. The Field Process Sheet provides for performance status of some important fabrication steps and for inspection status. However, many important fabrication steps are not indicated by the Field Process Sheet: erection steps; cleaning prior to installation of insulation; and some critical welding steps as preheating, checking gas flows, and checking for O_2 content in the backing gas. The Field Process Sheet, as a mechanism to exhibit status, is considered inadequate. The inadequacy of the Field Process Sheet is considered a major weakness in the Pullman Power Products system.

2. The Hold Tag mechanism described in Procedure ESD-240 is an acceptable method of exhibiting status when a defective or discrepant condition is noted.

3. The method of using the Field Process Sheet, the Hold Tag, and the Discrepancy Report is an acceptable mechanism to track the status of a discrepant condition and the final disposition of that condition. However, the mechanism is not always utilized.
   - DMR-604, dated February 14, 1973, for isometric package 1-03-1 required rework and reinspection of 14 Class B welds. There are no Field Process Sheets or Inspection Reports to demonstrate that the work had been performed.

   - The Field Process Sheet for FW-347 states that the weld was cut out in accordance with a specified DR. The referenced DR is not applicable to cutting out FW-347.

4. The method of indicating repair welds, as described in Procedures ESD-203 and -204, and the notation of repair welding on the Field Process Sheet are acceptable for showing repair status. However, FW-83 (Isometric Package 1-10-9) and FW-348 (Isometric Package 04-500-

139) were not stamped "R" to indicate repair.

5. Procedures KFP-8 and ESD-239 do present some information relative to the release of the systems for hydrostatic testing. Procedure ESD-229 does contain a method of indicating hydrostatic test status. These mechanisms are acceptable. Procedure ESD-229 should reference Procedure ESD-239 and require that the release be confirmed prior to initiation of the testing.

6. Paragraph 8.12 of Procedure KFP-8 requires that the Field Process Sheet be maintained in the area where the line is being installed. This requirement has been interpreted as having the Field Process Sheet in the area inspectors' station and not as being available to the foremen and the people performing the work while the work is in progress. This practice causes the Field Process Sheet to become an inspection sign-off record, rather than a traveler that presents necessary information to all individuals involved in the performance of the work.

7. Paragraph 7.2 of Procedure KFPS-7 requires that the foreman or pipefitter procure a drawing and Process Sheet prior to starting work and check off operations as completed. There was no evidence that this practice (which is in conflict with KFP-8) is observed.

Criterion XV. Nonconforming Materials, Parts, or Components

1. Procedures KFP-10, KFPS-9, and ESD-240 describe an adequate system of identifying nonconformances.

2. Procedure ESD-240 does not adequately describe the actual process by which Nonconformance and Discrepancy Reports are processed.

3. The Pullman Power Products/Pacific Gas and Electric Company interface relative to Discrepancy Reports is not described.

4. Procedure ESD-240 does contain adequate information relative to disposition and close-out (use of logs) for Nonconformance and Discrepancy Reports.

5. Systems that circumvent the nonconformance system have been established. Use of Note-O-Grams and Rejection Notices to denote discrepancies usually precludes their pick-up on a subsequent NR or DR. The use of these alternate systems removes the controls and reviews that have been integrated into the NR and DR system and also prevents information relative to the number and types of problems from being identified. These alternate systems are unacceptable.

Criterion XVI. Corrective Action

1. Procedures KFP-10, KFPS-9, and ESD-240 describe a corrective action system. The corrective action system is inadequate in that it does not require:

   - Categorization of reported discrepancies to permit evaluation and tracking.
   - Documentation of all discrepancies.
   - Inclusion of documented discrepancies in the NR and DR system, i.e., discrepancies reported in Note-O-Grams are not subsequently written as a NR or DR.
   - Tracking of discrepancies to determine which discrepancies are recurring.
   - Analysis of discrepancies to determine programmatic problems.
   - Reporting of significant conditions adverse to quality and the corrective actions taken to appropriate levels of management.

2. Based on the results of this audit and the problems encountered in the past, it appears that a corrective action system has not been operative.

3. There is no procedure for reporting 50.55(e) deficiencies.

Criterion XVII. Quality Assurance Records

1. Procedures KFP-16 and KFPS-14 and most of the ESD procedures adequately identify the records to be retained.

2. Procedures KFP-14 and KFPS-12 provide adequate guidance and mechanisms to assure collection of most records. Records that are not specified in these two procedures (e.g., records on heat treatment, torquing, pipe rupture restraints) do not have any documented mechanisms for collection, but are adequately assembled and retained.

3. There are no procedures for filing, storing, and protecting records, i.e., no requirements for the vault, no method on how records other than isometric packages are identified, no instructions on how records are to be stored. However, the practices employed do provide for adequate identification, retrieval, and fire protection.

4. Procedure ESD-212 does adequately describe a security system that provides "out" cards for identification of the record and the individual using the record and for the overall security of the records within the vault.

Criterion XVIII. Audits

1. Procedures KFP-18, -19, -21; Procedures KFPS-16, -17, -18; and Procedures ESD-219 and -222 describe an adequate audit program.

2. The audit program does not require the use of checksheets or procedures to delineate the scope and extent of the audit, nor does it require that the audit team leader be qualified.

3. In response to KFP-18, Paragraph 18.2.1, management audits were performed approximately every six months. Checksheets were employed. Based on the results of this audit and the results of Pacific Gas and Electric Company audits, these management audits appear to have been ineffectual.

4. Procedure KFPS-16 does not require management audits.

5. In response to KFP-18 and KFPS-16, internal audits were performed every six months. Checksheets were not employed.

6. There are no procedures for audit reports, audit responses, and time limitations on responses.

7. Procedures KFP-18 and KFPS-16 require that a copy of the audit report be transmitted to the Manager of Quality Assurance.

8. There are no requirements that the Manager of Quality Assurance track the audit reports or take any corrective actions when programmatic or recurring deficiencies are noted.

9. There are no requirements for periodic, independent, internal audits of the total quality program.

10. One independent internal audit was performed in January 1976.

V. EXIT INTERVIEW

The exit interview was conducted on September 20, 1977, at the Pullman Power Products offices at Diablo Canyon. In attendance at the exit interview were:

Jack Bowes	Pullman Power Products	Vice President, Production
Ed Gerwin	Pullman Power Products	General Manager Quality Assurance
John Ryan	Pullman Power Products	Resident Construction Manager
Pete Runyan	Pullman Power Products	Field Quality Assurance Manager
Chris Scannell	Pullman Power Products	Chief Field Engineer
Al Eck	Pullman Power Products	Quality Engineer, Central Staff
John Mitchell	Pullman Power Products	Consultant
Sherman Naymark	Nuclear Services Corporation	President
Jack Weber	Nuclear Services Corporation	Audit Team Leader
Bill Rowe	Nuclear Services Corporation	Auditor
Gerry Larsen	Nuclear Services Corporation	Auditor

The exit interview was initiated by Mr. Weber's summarizing of the purpose and scope of the audit, the basis against which the Pullman Power Products effort was measured, and the purpose of the exit interview. Additionally, a discussion was held on the fundamentals of auditing, i.e., an audit is a sampling technique, that enough samples are taken from each program or system to draw a conclusion, and that the conclusion is then applied to the adequacy of that program or system.

Each audit finding was presented, and discussions were held to clarify or refute the findings. Some findings were modified, based on additional evidence presented by Pullman Power Products. Upon completion of the

presentation of the audit findings, an overall summary of the findings was presented.

VI. SUMMARY

The Pullman Power Products Diablo Canyon effort has extended from 1971 to the present. The findings indicate that there were three distinct periods as related to the quality of the work. These findings are:

- Prior to early 1974, there is little evidence available to verify the adequacy of the work performed. The available evidence indicates that only a rudimentary quality control program existed and that control over the production organization was minimal.

- From early 1974 to late 1974, there is evidence available to verify the adequacy of the work performed. The available evidence indicates that control was achieved of the materials control program and the welding control program.

- From late 1974 to the present, an increasing amount of documentation and records has been generated to verify the adequacy of the work performed. The available evidence demonstrates that an increasingly more stringent quality program has been placed into effect and increasingly greater control of the work effort has been achieved. However, the present program and controls still do not meet 10 CFR 50, Appendix B requirements in those areas as delineated in Section IV of the audit report.

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
PACIFIC GAS AND ELECTRIC COMPANY	)	Docket Nos. 50-275 O.L. 50-323 O.L.
(Diablo Canyon Nuclear Power Plant, Units 1 and 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that on this 20th day of October, 1983, I have served copies of the foregoing MOTION FOR REVOCATION OF FACILITY OPERATING LICENSE OR, IN THE ALTERNATIVE, FOR CONTINUATION OF SUSPENSION, mailing them through the U.S. mails, first class, postage prepaid.

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