



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

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June 1, 1984

MEMORANDUM FOR: William J. Dircks
Executive Director for Operations

FROM: Nunzio J. Palladino *NJP*

SUBJECT: DIABLO CANYON HEARING

Congressman Udall, on May 23, 1984 sent us a letter describing his inquiry into the Diablo Canyon matter and listing items that NRC needs to address. I would like you to ensure that knowledgeable staff, e.g., those in IE headquarters who have QA expertise, focus carefully on the issues in the last paragraph in Congressman Udall's letter, especially those pertaining to the NSC audit and related questions. If there are any questions on the questions, staff should check with Congressman Udall's staff. Answers should be provided for the Commission to review well in advance of the hearing.

cc: Commissioner Gilinsky
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
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COMMISSION ORDER

CLI 84-5

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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COMMISSIONERS:

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Nunzio J. Palladino, Chairman
Victor Gilinsky
Thomas M. Roberts
James K. Asselstine
Frederick M. Bernthal

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In the Matter of

PACIFIC GAS AND ELECTRIC COMPANY,

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

Docket Nos. 50-275 OL
50-323 OL

MEMORANDUM AND ORDER
(CLI-84-5)

This decision completes the Nuclear Regulatory Commission's ("NRC" or "Commission") reinstatement of Pacific Gas and Electric Company's ("PG&E" or "licensee") Facility Operating license No. DPR-76 ("low-power license") to conduct low-power tests (at up to 5% of rated power) at the Diablo Canyon Nuclear Power Plant, Unit 1 ("Diablo Canyon"). The events leading up to the Commission's suspension of this license and subsequent steps to reinstate the license in part have been described in several prior orders of the Commission.¹ Accordingly, this order focuses on events which have

¹The low-power license was issued on September 22, 1981. See CLI-81-22, 14 NRC 598 (1981). It was suspended on November 19, 1981. See, CLI-81-30, 14 NRC 950 (1981). Following substantial review and reanalysis of the design and construction of Diablo Canyon, and public meetings at which all interested parties participated, the Commission reinstated the low-power license in part to authorize PG&E to load fuel and conduct pre-criticality tests (operational modes 6 and 5).

[Footnote Continued]

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occurred since the Commission's last order and refers back to previous events only as necessary.

Safety Review

A Commission condition for reinstatement of Diablo Canyon's low-power license was the successful completion of an Independent Design Verification Program (IDVP). CLI-81-30, 14 NRC 950 (1981).² The IDVP was conducted by organizations and individuals not associated with PG&E and was managed by Teledyne Engineering Services (TES). PG&E conducted a separate design verification effort called the internal technical program (ITP) which was performed by PG&E's Diablo Canyon Project ("DCP"), a joint organization of PG&E and Bechtel. Then, the NRC staff, with the help of its consultant, Brookhaven National Laboratory, conducted its own analysis.

[Footnote Continued]

CLI-83-27, 18 NRC ____ (1983). Subsequently, the U.S. Court of Appeals for the District of Columbia Circuit denied a motion to stay the Commission's authorization to PG&E. On January 16, 1984, the Commission denied Joint Intervenor's motion for a stay of fuel loading and pre-criticality testing at Diablo Canyon finding that these activities did not present significant health and safety risks and would not prejudice subsequent Commission decisions or foreclose modifications, if necessary, of the plant. CLI-84-1, 19 NRC ____ (1984). On January 25, 1984, the Commission reinstated another part of PG&E's low-power license by authorizing precritical hot system testing (operational modes 4 and 3). As a separate matter, the Commission declined to review the Atomic Safety and Licensing Appeal Board's decision in ALAB-728, 17 NRC 777 (1983) which affirmed a decision by the Atomic Safety and Licensing Board on all issues other than quality assurance related to PG&E's application for a license to load fuel and conduct low-power testing.

²The Commission's Order required an IDVP of seismic, service-related contract activities prior to 1978. In addition, the NRC staff required an IDVP of non-seismic, service-related contract activities, PG&E internal design activities and post-1978 seismic service-related contract activities. In addition to design verification, the IDVP also reviewed some construction activities.

The scope of the IDVP and ITP, and the relation between them, is explained in detail in ALAB-763. 19 NRC ____ (1984). Essentially all of Diablo Canyon's safety-related seismic design was reviewed: the ITP reanalyzed all of the seismic design for safety-related structures, systems and components, while the IDVP oversaw and verified selected portions of the work in accordance with the program approved by the Commission. The review of non-seismic safety-related design was not as comprehensive. The IDVP reviewed three safety-related systems and two areas of safety-related analysis applicable to many other systems. Items of concern identified by the IDVP as potentially generic were addressed by the ITP for all systems designed by PG&E. In turn, the ITP verification work was sampled by the IDVP and the results reported in an Interim Technical Report (ITR). The ITP independently reviewed other non-seismic systems. As a result of this interaction between the ITP and IDVP, the IDVP obtained a broad and comprehensive understanding of the non-seismic design of Diablo Canyon.

The IDVP was completed in October 1983; PG&E's ITP is still ongoing. The NRC staff's review of the IDVP Final Report is contained in Supplements 18, 19 and 20 to the Safety Evaluation Report (SER) for Diablo Canyon, Unit 1. Supplements 18 and 19, PG&E's ITP, and physical modifications to the plant were the basis of the staff's recommendation of the partial reinstatement of PG&E's low-power license to load fuel and perform pre-criticality testing at Diablo Canyon. CLI-83-27, 18 NRC ____ (1983). At that time there were still several open items and follow up items which the staff believed required resolution prior to reinstatement of the rest of the low-power license.

The staff has updated its progress on open items in Supplement 20 to the Safety Evaluation Report (SSER 20). The staff considered information

in the seismic monthly reports from the IDVP and PG&E, the IDVP Final Report, the PG&E final reports, and the Interim Technical Reports.³ SSER 20 presents the staff's safety evaluation of open items and follow up items that in the staff's view, must be satisfactorily resolved prior to the Commission's reinstatement of PG&E's authority to achieve criticality and perform low-power testing, i.e. reinstatement of the low-power license for Diablo Canyon, Unit 1. SSER 20 reports that many of the open items and follow up items previously identified in SSERs 18 and 19 have been resolved. On March 27, 1984, the NRC's Director of Licensing reported that in his view, all open and follow up items identified in SSER 20 had been resolved satisfactorily for reinstatement of the low-power license for Diablo Canyon, Unit 1. He also stated that: (1) he knew of no new information since the completion of SSER 20 which would affect the staff's conclusions or judgments in SSER 20; and (2) that any other issues not addressed in SSER's 18, 19, and 20 had been satisfactorily addressed for the purposes of low power operation.

The Commission also heard from Mr. Isa Yin, an NRC inspector at Diablo Canyon. Mr. Yin reported that he had found inadequate compliance with the quality assurance program for designing supports for small bore and large bore piping. He also stated that reinspection following modification of the pipe suspensions would be rendered more difficult by the environmental conditions in the plant after operation at low-power. Accordingly, he requested that the Commission defer granting a low power license until PG&E

³The Interim Technical Reports (ITR) are called interim because they were issued before completion of the IDVP. The ITRs document the completion of technical issues.

had remedied the deficiencies in pipe supporting systems and those changes had been reinspected by the NRC.

The Commission voted to defer reinstatement of the low power license for Diablo Canyon until the disparity between Mr. Yin's views and those of the rest of the technical staff had been considered by the Advisory Committee on Reactor Safeguards ("ACRS") - a statutorily created advisory committee comprised of experts in various disciplines including nuclear engineering, nuclear physics, and radiation health physics.

The ACRS met in public session on April 6, 1984 and heard from Mr. Yin, other members of the NRC staff, and Mr. Stokes, a previous employee at Diablo Canyon who had made allegations regarding the adequacy of the quality assurance program for the design of supports for small bore pipes. Mr. Yin had found that some of Mr. Stokes' allegations were correct.

The NRC staff informed the ACRS that, on March 29, 1984 the NRC had convened a peer review panel of technical experts to review Mr. Yin's concerns. The panel met with Mr. Yin, and later with representatives of PG&E and some of the contractors involved in the IDVP. The peer review panel also visited Diablo Canyon to examine in detail some of the specific items identified as deficient by Mr. Yin. After the visit, the peer review panel met with Mr. Stokes, and somewhat later met again with Mr. Yin to discuss the panel's proposed findings. The panel concluded that Mr. Yin's concerns did not warrant delaying low-power operation of Diablo Canyon, but did require resolution prior to going to full-power.

Mr. Yin also addressed the ACRS. He stated that "while several reverification and corrective action programs should be completed by PG&E prior to NRC issuance of a full power operation license, there will be no apparent risk to the public health and safety to allow the reactor testing

up to five percent power at the present." On questioning by members of the ACRS, Mr. Yin reiterated his position in spite of his acknowledgement of some residual differences with the rest of the NRC staff.

On April 9, 1984 the ACRS reported on its consideration of Mr. Yin's concerns. Based on the presentations by Mr. Yin and other members of the NRC staff and supporting documentary material, the ACRS found:

We agree that it is acceptable to permit low power operation at this time. We believe that such operation will not compromise corrective actions that may be required.

In view of the statements by the ACRS and Mr. Yin, the Commission concludes that the concerns previously expressed by Mr. Yin have been resolved satisfactorily and do not warrant deferring the reinstatement of the low-power operating license for Diablo Canyon.

Quality Assurance

The Joint Intervenors and the Governor of California raised issues related to design quality assurance and to construction quality assurance at Diablo Canyon. Their motion to reopen the record on the design quality assurance (DQA) program at Diablo Canyon was granted, and resulted in an adjudicatory proceeding before the Atomic Safety and Licensing Appeal Board at which the adequacy of the IDVP was a central issue. On March 20, 1984, the Appeal Board issued a 122-page decision in which it found:

[T]he scope and execution of the applicant's verification program have been sufficient to establish that Diablo Canyon Unit 1 design adequately meets its licensing criteria. The applicant's verification efforts provide adequate confidence that the Unit 1 safety-related structures, systems and components are designed to perform satisfactorily in service and that any significant design deficiencies in that facility resulting from defects in the applicant's design quality assurance program have been remedied. Accordingly, we conclude that there is reasonable assurance that the facility can be operated without endangering the health and safety of the public.

ALAB-763, slip op. at 101.

Additional motions filed by the Joint Intervenors and Governor of California to reopen the record on DQA are still pending before the Appeal Board.

The Joint Intervenors and the Governor of California also sought reopening of the record on construction quality assurance (CQA). That motion was denied by the Appeal Board in ALAB-756, 19 NRC ____ (Dec. 19, 1983). Petitions for review of that decision are now pending before the Commission, and petitions to reopen the record are also pending before the Appeal Board.

In view of the pendency of the petitions for review of ALAB-756 (on construction QA), and of the fact that the time for filing petitions for review of ALAB-763 (on design QA) has not elapsed, we express no opinion as to the correctness of the two Appeal Board decisions. Nevertheless, we consider it worthy of note that there is nothing in the Appeal Board's decisions on construction quality assurance or design quality assurance to suggest that PG&E's low-power license should not be reinstated.

Allegations

Since 1982, the NRC staff has received numerous allegations and concerns about the design, construction, and operation of the Diablo Canyon Nuclear Power Plant (Diablo Canyon) and the management of these activities by Pacific Gas and Electric Company (PG&E).⁴ As the IDVP neared completion

⁴In early 1982, the staff received allegations regarding the design and operation of the component cooling water system (CCWS) for Diablo
[Footnote Continued]

and the target date for a Commission decision on reinstatement of the license approached, the flow of allegations became a deluge and the NRC staff, with Commission concurrence, established a special Diablo Canyon Allegation Management Program ("DCAMP") to pursue the allegations and concerns to resolution.

The DCAMP is described in Supplement 21 to the Safety Evaluation Report for Diablo Canyon (SSER 21). The procedures for handling allegations under DCAMP included confirmation of the allegation by contacting the alleged whenever possible, site inspections of construction or documentation, independent measurements and evaluations where appropriate, technical reviews, interviews with site personnel, public meetings on significant technical issues, discussions between the alleged and staff on staff's findings and reports to the Commission. So far, allegation management has involved more than 40 members of the NRC technical staff and contractor personnel and required 18,000 person hours. The staff's review of an allegation was not limited to the allegation itself, but included all necessary related issues.

[Footnote Continued]

Canyon, Unit 1. The staff's evaluation of the allegations is described in Supplement No. 16 to the Safety Evaluation Report (SSER 16). On the basis of that evaluation, the staff concluded that the CCWS satisfied most design requirements, that the only deviation was acceptable on the basis of PG&E's satisfactory demonstration of design capability in this area, and that the allegations regarding the CCWS had no generic implications. In ALAB-763, the Appeal Board instructed the Director, Nuclear Reactor Regulation, to ensure that PG&E's proposed technical specification on CCWS is incorporated into the plant technical specifications before permitting operation. The order of reinstatement of PG&E's low-power license is contingent on the Director's completion of that action.

On January 4, 1984, the staff reported to the Commission on the investigation into 103 allegations using the procedure described above. SECY-84-3, SSER 21. However, additional allegations continued to be received and the DCAMP has attempted to keep up with them. Staff provided an updated written review of the allegations on February 6, 1984 (SECY-84-61) and reported on them to the Commission in public meetings held on January 23, February 10, and March 19, 1984. By mid-March, the total number of allegations was approximately 400. On March 20, 1984, staff issued SSER 22, which addressed 219 of the allegations, including the ones addressed previously. Staff reported that it had examined 188 allegations in detail and determined that 31 other allegations did not warrant detailed review because they raised issues similar to those already considered or were not related to significant safety issues.

In mid-March, the Commission gave public notice that it hoped to be able to make a decision on reinstatement of the license for criticality and low power operation on March 26, 1984. In the weeks before March 26, scores of new allegations were filed. One group, the Government Accountability Project, filed allegations that were received by the Commission only hours before the scheduled meeting. Approximately 500 allegations have now been filed. Needless to say, this flood of last-minute alleged new information, years after the adjudicatory proceedings began, has strained the Commission's resources.

As noted above, the first two hundred of the recent allegations have been reviewed in detail under DCAMP. No license, not even a low power license, can be issued without adequate protection to the public health and safety. However, special considerations apply to low power operation. Most importantly, the possible consequences of an accident during low-power

operation are limited to a very small fraction of those possible at full power. Low-power operation would generate between one-hundredth-and-one tenth of the radioactive fission products which would be generated by full power operation. Thus, any consequences of accident would be significantly less than those determined by the safety evaluation for Diablo Canyon. Accident consequences would be further reduced by the lower quantity and rate of production of decay heat produced at low-power as compared to that produced at full power. However, the energy required to damage a reactor, the capacity of the heat removal systems, and safety features are not reduced by low power operation. Therefore, accidents involving failures of these systems at low-power operation would evolve over longer periods than at full power operation and could be contained by equipment operating at only a few percent of capacity.

With the above in mind, all of the allegations have been reviewed under one basic safety criterion: is there significant new information which suggests that some safety-related structure, system or component necessary for safe low power operation will not perform its safety function, or that there are such weaknesses in licensee's management or quality assurance that plant safety is called into serious question. For the first two hundred allegations, the results of the review are documented in SSER 21 and the transcripts of the public Commission meetings in January, February, and March. For the approximately 300 more recent allegations, the Commission was faced with a choice of decision delay, while the review could be carefully documented, or reliance on a preliminary review and staff expert judgment without the more detailed documentation. The Commission has deliberately chosen the latter course. There is every reason to

believe that more allegations will be filed and delay to provide written documentation will lead to paralysis in Commission decisionmaking.

All of the allegations received on or before April 13, 1984, have been reviewed under the criterion specified above and those necessary to be resolved prior to license reinstatement have been resolved. As a result, none of these allegations warrant a delay in the reinstatement of the low-power license. Work under DCAMP will continue, both to document the reviews completed to date and to address those matters that need to be resolved prior to licensing at higher power levels.

Operator Experience

The Commission has also considered the circumstance that the regular operating staff for Diablo Canyon has a limited amount of experience with operating similar facilities. The Commission was briefed on the issue by PG&E as part of its comments at the public meeting of February 10, 1984. PG&E has 43 holders of senior operator licenses and 16 holders of reactor operator licenses at Diablo canyon. A typical licensee has successfully completed: (1) a 30-month program on power plant fundamentals, equipment, systems, radiation protection and administrative controls including time on-shift at the facility; and (2) an approximately year-long licensing program. Several license holders have participated in pre-operational testing programs, hot functional testing programs, on-going testing, maintenance, surveillance and modification programs. Licensed operators have also each had from 200 hours to 300 hours of hands-on simulator training. However, because the operators have not had actual plant operational experience, additional experienced personnel will be on hand to assist with startup operations. This extensive training of PG&E's

operators and PG&E's commitment to provide additional trained personnel during start-up have led the Commission to find that PG&E has an adequate operating staff for Diablo Canyon.⁵

Seismic License Condition

The Commission has also considered recent developments regarding the characterization of the Hosgri Fault. At the public meeting of March 26, 1984, the staff reported that it had received a preprint of an article by certain petroleum geologists who have used previously unavailable information developed during petroleum exploration to determine that Hosgri Fault is a thrust fault and not a strike/slip fault as previously believed. In view of this development, the staff proposed that PG&E should conduct further seismic and geologic studies of the Hosgri Fault. Mr. Devine, a geologist with the United States Geological Survey also discussed the new

⁵The Commission notes that a literal reading of 10 CFR 55.25(b), which was adopted in 1963, would have required candidates for operator license examinations, at facilities that have yet to go critical, to have had "extensive actual operational experience" before taking the operator license examination. Since 1967, the NRC has taken the position, in publicly available documents, that completion of NRC-approved training that utilizes simulators can, together with other nuclear reactor activities, constitute adequate experience. Operators at Diablo Canyon and four other plants were licensed on this basis. Because this long-standing interpretation of the rule does not match the literal language of the rule, although it satisfies the rule's purpose and does not diminish safety, the Commission will shortly initiate a rulemaking proceeding to conform the language of the rule to this long-standing practice. In the interim, the Commission sees no reason to revoke or suspend existing operator licenses, including those held by the operators at Diablo Canyon. The sophistication of current simulator training provides a suitable basis for operator licensing, and similar training in lieu of operational experience constitutes no diminution of safety. Under these circumstances, the Commission finds no reason to grant Joint Intervenor's April 10, 1984 motion for a stay based on the operator license issue.

findings with the Commission. In Mr. Devine's view, this new information was not startling but more in the nature of a refinement in the understanding of the overall faulting pattern in the region around Diablo Canyon. Mr. Devine supported the NRC staff's proposals for further study. He also stated that, in his view, the new report did not warrant any change in the magnitude of the Safe Shutdown Earthquake for Diablo Canyon.

The Commission has determined that this new information does not affect its low-power decision. There is no indication that the new information undercuts the seismic design basis for Diablo Canyon. However, the Commission has asked the ACRS to review the new information prior to any full power decision and to comment on a draft license condition which would require PG&E to reassess by 1988 the seismic design basis for Diablo Canyon.

Additional Matters

The staff has denied Joint Intervenor's petition for enforcement action under 10 C.F.R. 2.206. DD 84-8, 19 NRC ____ (March 26, 1984). Joint Intervenor's contended that PG&E's failure to provide to the Commission a 1977 audit performed by Nuclear Services Corporation on the quality assurance program by Pullman Power Products, a PG&E contractor, required continued suspension of the low-power license. The Director, Inspection and Enforcement found that PG&E made a material false statement by failing in 1978 to provide the audit to the Licensing Board considering quality assurance. However, the Director also found that under the circumstances, the material false statement was a violation of the lowest severity level and, as such, warranted only a Notice of Violation. That Director's decision is still pending before the Commission for its determination of

whether to review it. 10 CFR 2.206(c)(1). Under these circumstances, the Commission expresses no opinion on the correctness of the Director's decision. However, the Commission finds noteworthy that nothing in the decision suggests that PG&E's low-power license should not be reinstated.

On April 12, 1984, the Government Accountability Project (GAP) petitioned the Commission pursuant to 10 CFR 2.206 to direct the Office of Inspector and Auditor (OIA) to initiate an investigation into alleged false statements by PG&E and the NRC staff regarding the resolution of allegations of deficiencies in design and construction quality assurance at Diablo Canyon. GAP also requested an opportunity to address the Commission on April 13, 1984 on the alleged false statements and suggested that the Commission defer any decision on reinstituting PG&E's low-power license for Diablo Canyon until this matter is resolved. In addition, GAP requested the Commission to direct the Office of Investigations (OI) to release transcripts of interviews with allegeders to the Board considering design and construction quality assurance.

GAP's request was supported by affidavits from Mr. Steven Lockert and Mr. Charles Stokes. Both have provided allegations to the Commission on several previous occasions; most recently, Mr. Stokes addressed the Advisory Committee on Reactor Safeguards (ACRS). Mr. Lockert's affidavit refers to some welds, made in 1974 and corrected in 1977 for which, in some instances, documentation was not provided until 1982. Deficiencies in welds and the quality assurance program for documenting repairs to welds have been the subject of many other allegations investigated by the staff. Similarly, Mr. Stokes' affidavit contains allegations of the type already extensively considered by the staff. Mr. Stokes' affidavit also draws

Final conclusions based on his opinions of various actions taken at Diablo Canyon.

For the most part, GAP's allegations of false statements by the NRC staff and PG&E are based on its own interpretation of the implications of various allegations regarding conditions at Diablo Canyon. Others of GAP's allegations are based on GAP's differences of opinion with various statements by members of the NRC staff. To the extent that GAP relies on statements by Mr. Yin, GAP's conclusions are not supported by Mr. Yin's statements to the ACRS and a Member of Congress. As for staff's implementation of its policy of reinterviewing alleged, the Commission notes that staff's policy was announced before GAP imposed additional procedural burdens on access to alleged. Finally, regarding statements addressing compliance with 10 CFR Part 50, Appendix B, that issue is pending before the Commission in the context of its review of ALAB-756 and ALAB-763. Because those reviews are still pending, the Commission expresses no opinion on this issue. However, the Commission notes that the Appeal Board found that PG&E had complied with Appendix B.

Under these circumstances, the Commission finds that nothing in GAP's recent submittal requires the Commission to delay consideration of reinstatement of PG&E's low-power license. However, the Commission has asked its Office of Investigations to consider GAP's request for the protected release of transcripts of interviews to the Board and has requested its Office of Inspector and Auditor to review the petition and to take whatever actions it deems necessary.

Motion For Stay

Joint Intervenors have requested the Commission to stay the effectiveness of any reinstatement of PG&E's authority to operate Diablo Canyon Unit 1 at low-power until the completion of all pending administrative matters and the conclusion of any judicial review of the Commission's decisions underlying such reinstatement of authority. In the alternative, Joint Intervenors have requested the Commission to stay for several days any reinstatement of PG&E's low-power license to permit them to apply to the United States Court of Appeals for the District of Columbia Circuit for an emergency stay pending appeal. Joint Intervenors base their request on three factors: (1) the issues raised in their stay request of October 31, 1983; (2) pending allegations of design and construction deficiencies at Diablo Canyon and motions based on those allegations; and (3) an affidavit by Dr. Michio Kaku. The Commission believes there is no warrant to stay the effectiveness of the reinstatement of PG&E's low-power license until all administrative and legal appeals are exhausted. However, the Commission will delay the effectiveness of this decision until noon, April 19, 1984 (Eastern Time) to give Joint Intervenors an opportunity to read the decision and determine whether to pursue judicial review.

Nothing has happened since October 31, 1983, which would cause the Commission to change its mind about Joint Intervenor's previous motion for a stay. As for recent developments based on allegations, the progress on resolving these allegations indicates that they do not support a motion for stay. Finally, the generic nature of Dr. Kaku's affidavit reveals a lack of specific knowledge of the Diablo Canyon plant and, in particular, the activities to be undertaken during start-up and low-power testing. The affidavit does not describe any specific aspect of low-power operation of

Diablo Canyon which would create an undue risk to public health and safety or to the plant personnel. Rather, the affidavit is based on general and well-known considerations, some of which are irrelevant to Diablo Canyon, and hypothetical accident scenarios without any indication of their likelihood of occurrence during low-power operation at Diablo Canyon. It is well-established that speculation about a nuclear accident does not, as a matter of law, constitute the imminent, irreparable injury required for staying a licensing decision. State of New York v. NRC, 550 F.2d 745, 756-57 (2d Cir. 1977); Virginia Sunshine Alliance v. Hendrie, 477 F. Supp. 68, 70 (D.D.C. 1979). Under these circumstances, the Commission sees nothing in Dr. Kaku's affidavit which contradicts the extensive technical reviews of Diablo Canyon. For these reasons, the Commission denies Joint Intervenor request for a stay.


Conclusion

The Commission has determined that the concerns which led it to suspend PG&E's low-power license have been resolved to the point where that license can now be reinstated in its entirety.⁶

Commissioner Gilinsky dissents from this order. The separate views of Chairman Palladino and Commissioners Gilinsky and Bernthal are attached.

It is so ORDERED.

For the Commission


SAMUEL J. CHALK
Secretary of the Commission



Dated at Washington, DC,

this 13th day of April, 1984.

⁶Still pending before the Commission is PG&E's request for an extension of the expiration date of the original low-power license. As the Commission has previously stated, PG&E's extension request is subsumed within the proceeding on PG&E's application for a full-power operating license. The staff safety evaluations, testimony and views of the parties, and adjudicatory proceedings that have been held in this proceeding are all applicable, to the extent relevant, to PG&E's extension request. The Commission finds that the previous adjudicatory hearings that have been held satisfy the hearing requests that have been filed with regard to PG&E's extension request and that, because PG&E's extension request does not raise any health, safety or environmental issues that have not been resolved previously, that extension request should be granted.

Chairman Palladino's Separate Views

believe that it is important to put in context Commissioner Gilinsky's statements about reactor operator experience.

The Commission did not "disregard a vital safeguard"; it has simply applied the same standards to Diablo Canyon that have been applied to other commercial power plants over the last 17 years. I see no reason to impose different standards on this plant than on the others which have preceded it.

Each applicant for a reactor license is required to develop and implement an NRC-approved training program for its reactor operator candidates. It has been NRC practice to accept satisfactory completion of an NRC-approved training program as fulfilling the prerequisite for an operator candidate to take an NRC reactor operator examination.

As pointed out by the staff in SECY 84-152:

"There are three phases of an NRC approved cold license training program. Phase I includes basic fundamentals and operation of a research reactor during which the trainee performs at least 10 reactor startups. The time normally required to cover Phase I is 12 weeks. Phase II includes participatory observation of the day-to-day operation of a

nuclear power plant. This observation includes normal operation, surveillance testing and radiation procedures. Also included in this phase is the operation of a nuclear power plant simulator similar in design to the facility for which the trainee will be seeking a license. The duration of Phase II training varies from four to six months. Phase III is the plant specific design lecture series which covers the features of trainee's facility and normally take six weeks to complete."

Reactor simulators have become sophisticated devices which provide the opportunity to expose a reactor operator candidate to a variety of plant operating conditions which is not generally possible on an actual plant.

It is also important to note that actual operating experience consists of a number of components in which reactor operators are involved. These include such activities as learning about systems during construction -- a particularly good time to learn about the plant.

I also want to comment on Commissioner Gilinsky's statement that advisors with questionable qualifications may be positively dangerous." I categorically reject the implication that advisors at Diablo Canyon, or at any plant for that matter, are "positively dangerous." Each advisor has previously had an operator license

at another commercial nuclear power plant and has undergone training and examination on specifics of the plant at which they are to advise. The debate that took place relative to Diablo Canyon was not about questionable qualifications. Rather, it was about whether the NRC itself administers the examinations for these advisors or whether the NRC audits the examinations administered by the utility. The Commission has decided on the latter course of action, but neither course of action results in advisors who are positively dangerous.

4/13/84

ADDITIONAL SEPARATE VIEW OF COMMISSIONER GILINSKY
ON REINSTATEMENT OF LOW-POWER OPERATING LICENSE
AT DIABLO CANYON

Attached are the separate views which I distributed two weeks ago when the Commission last discussed the reinstatement of the Diablo Canyon low power license. At that time I withheld approval because of the lack of actual operating experience on the plant's operating crews and the absence of adequate compensating measures. The situation has not changed since then. None of the licensed operators at the plant has actual operating experience at a comparable commercial reactor.

The Commission has decided to require that the operators be backed up by experienced advisors. The critical difference between myself and the other Commissioners is over how to certify the advisors' knowledge of the plant. Advisors with questionable qualifications may be positively dangerous. I want the NRC to administer the examinations they will be given. The Commission is satisfied with company administered examinations. The view has been expressed that it makes no difference who does the examining. I regard this as naive.

Since the Commission's last meeting on this subject a legal bar to low power operations at Diablo Canyon has surfaced. I have discovered that the NRC's regulations require operators whose license examination is conducted on a simulator, rather than on an operating plant, to have had "extensive actual operating experience at a comparable reactor". None of the Diablo Canyon operators meet this standard. Their licenses are therefore invalid until such time as they either meet this test or the Commission decides to exempt them from this requirement on the basis of the factors enumerated in the regulations.

After receiving a memorandum from the General Counsel stating that the course followed in this case is inconsistent with the plain meaning of the regulations, the Commission decided this morning to ignore its regulations and simply assert that the licenses are valid. The effect is to disregard a vital safeguard which ensures that some degree of experience is available on a plant's staff. Had the regulations been followed, Diablo Canyon would not now find itself without any experienced operators. The operators are the most important safety feature in the plant since they have the discretion to undo all the other safety features in the plant. It is hard to think of a more important safety issue than the competence and experience of the operators.

3/27/84

SEPARATE VIEW OF COMMISSIONER GILINSKY
REINSTATEMENT OF LOW-POWER OPERATING LICENSE
AT DIABLO CANYON

I am withholding my approval of the reinstatement of the Diablo Canyon low-power license because I am not satisfied with the readiness of the plant for operation. I am especially concerned by the absence of commercial experience on the operating crews and the failure to compensate adequately for this.

There are two other aspects of this case -- seismic design and construction quality assurance -- which, while not disabling from the point of view of low-power operation, do not cast the NRC's own review in a particularly favorable light.

Operating Staff Experience

I regard the operator experience question as the most important one in this case. Seismic issues have received a great deal of attention, as they should, but it is well to remember that seismic protection is designed against unlikely contingencies. We rely on the operators for ensuring safety 24 hours a day, every day.

Diablo Canyon does not have a single operator who has had actual operating experience on a commercial nuclear power plant of comparable size. Four operators previously operated the Company's Humbolt Bay plant, a very small boiling water reactor -- one-twentieth the size of each Diablo Canyon unit -- which has been shut down for 8 years, hardly relevant experience. Much has been made of the fact of simulator training. This is valuable, but it does not compensate for the complete lack of relevant commercial experience. It is worth noting also that Diablo Canyon does not have a site-specific simulator.

This problem should have been resolved a long time ago. At this point, there seems to be no alternative to supplementing the shift crews with experienced advisors for the initial period of operation. The difficulty with the way this has been done is that there is no assurance that they have the site-specific training and knowledge needed for safe operation. I would approve plant operation at low power if the advisor on each shift previously held a senior operator license on a large commercial plant, and if he has passed the site specific portion of the senior operator license examination for Diablo Canyon. The Commission has instead chosen to allow the Company itself to decide whether the advisors are qualified and to require such advisors only above five percent power.

Seismic Design Standard

I continue to be concerned by the issue of seismic design standards. The root of the difficulty is that although PG&E and the NRC staff accepted a standard based on a Richter scale magnitude 7.5 earthquake for the purposes of the licensing hearing, after the Hosgri fault was discovered, they did not accept that standard in practice. Apparently in order to avoid having to make significant modifications to the design, PG&E and the NRC staff decided on a number of changes in the way the post-Hosgri standard was applied. These had the effect of shaving safety margins to the maximum extent. In at least one respect, which involved a substantial reduction in safety margin, they resorted to a highly dubious technique. This reduction, referred to as the tau effect, was accepted by two licensing Boards which thought that they, and the expert witnesses, understood the technical basis. As it turns out, there is hardly any technical basis for the reductions.

I asked the Commission to take review of this question long ago. There was plenty of time to do a review before the plant was ready for operation but at each point the concern that plant operations might be held up persuaded the Commission to ignore the problem. What I find particularly disturbing is that it was clear to me that the Commission declined to take review not because it understood the

seismic design and thought it to be acceptable, but because it looked like a can of worms, and the Commission feared the consequences of reopening the issue.

The ACRS recently told the Commission that "we do not believe that scientific or engineering analyses exist today that could be used to calculate the specific quantitative reductions in free-field seismic spectra [the tau effect] that he [Dr. Newmark] recommended for the Diablo Canyon Nuclear Power Plant." Had the Committee stated this view years ago when it originally reviewed the seismic design standard, I doubt that the Boards would have accepted the standard.

The most favorable statement that the ACRS could ultimately make about the seismic standard was that the Committee continued to feel that overall "the use of the staff approach leads to an acceptable level of safety in this instance." This does not address the tau reductions or whether the safety regulations have been satisfied. What I take the Committee to mean is that the earthquake chosen to determine the seismic standard is too large and that the plant's design is adequate for a smaller earthquake. No doubt the Committee also took into consideration the fact that Diablo Canyon is a relatively isolated site. The ACRS did remind the Commission that it had earlier recommended

that a thorough review of the entire seismic design be undertaken, to be completed about 1988.

At yesterday's meeting, the Commission learned that a paper which is to be delivered at the Scripps Institute in April raises new questions about the interpretation of the nature of the faults near Diablo Canyon. This new information reinforces the need for a thorough review of the entire seismic design, as proposed by the ACRS. The Commission has now agreed in principle to such a study. I wish this had been done earlier but I am prepared to accept this approach as a way of dealing with the seismic issue.

Construction Quality Assurance

The NRC has received hundreds of allegations concerning the Diablo Canyon plant. Because one of the allegations was sent to me directly, I felt that I should look into how they were resolved. I chose the audit of the Pullman Power Products, the prime piping contractor from 1971 to 1977, done by the Nuclear Services Corporation (now Quadrex). An important conclusion of that audit report was that the Pullman quality assurance system had been inadequate -- among other things, that "there is no confidence that welding done prior to early 1974 was performed in accordance with welding specification requirements." Most of the piping had been installed by 1974. The NRC staff initially

dismissed this concern on the basis of its discussions with PG&E and a review of the staff's own audit records for the period between 1971 and 1977.

The NRC staff subsequently decided to look into the allegation more closely, apparently because of the Regional Administrator's feeling that more needed to be done. In December 1983, the staff issued a supplementary Safety Evaluation Report stating that it had found "...no evidence to conclude that there was a programmatic breakdown in Pullman Power Products QA program..." and that "The details of the staff review are documents in Inspection Report 50/275/83-37."

When I asked to see the inspection report three months later, the inspector initially refused to supply it to me. As it turns out, only notes existed at the time that the staff wrote the SSER. So far as I can tell, the inspection report only began to be written at about the time I asked to see it. An explanation and correction of the reference to the inspection report was subsequently submitted by the staff to the Commission.

It now appears that the NRC staff called the leader of the NSC audit only in February and, when that person said that he could not remember much about the audit, did not pursue

this further. More could readily have been done, and should have been done earlier.

I would have more confidence in this review if the NRC had first contacted the people who worked on NSC's audit, had then completed the inspection report, subsequently written the SSER, and had only then informed the Board and the Commission of its conclusions.

VIEWS OF COMMISSIONER BERNTHAL ON REINSTATEMENT OF LOW-POWER OPERATING LICENSE AT DIABLO CANYON

Having gone through 2½ years and literally hundreds of allegations, thousands of hours of inspections, reinspections, analysis, and investigation, we can often lose sight of the 98% that is done, since it is frequently the job of the Commission and especially the NRC staff to focus on the 2% that remains undone.

I would therefore like to state for the record the effort that has gone into the long, painstaking, and sometimes just plain painful period of reevaluation and modification of the Diablo Canyon power plant. During this period the licensee, through its primary contractor, has spent some 2,000,000 hours of professional effort to address the problems raised in the fall of 1981 and thereafter; other firms have carried out independent evaluations to the tune of 250,000 hours; the staff of the NRC has devoted 70,000 hours to the technical issues, and another 18,000 hours to evaluating allegations. Diablo Canyon is almost certainly the most inspected plant ever built.

All this is not to imply, of course, that legitimate questions cannot or should not still be asked. I would like to focus on one or two such broad, and I believe legitimate, considerations that remain with respect to the Diablo Canyon powerplant beginning operations. But first let me note what is not reasonable or legitimate to expect in any such massive endeavor. What is not reasonable to expect is perfection. It is not reasonable to expect all things to be perfect at any multibillion dollar construction project, a project involving thousands of workers and millions of independent steps leading to completion, over a period of some 15 years. And, as might have been expected, Diablo Canyon was not perfect. What was not expected, was that it wasn't even just good enough, 2½ years ago, when this second construction, as it were, began.

In my judgment, two important and legitimate issues deserve special mention here today. One question, and perhaps the most fundamentally

important because it is unique to Diablo Canyon, is that of the seismic design adequacy of the Diablo Canyon facility. It should be understood that the science of geology, and especially the study and forecasting of seismic events is an inexact science, as is the engineering of structures to withstand seismic events of a given magnitude. But the best experts available in the field today have offered reasonable and sufficient assurance that the design basis and construction of this plant is adequate to withstand the maximum probable earthquake in the geologic region of the Diablo Canyon plant. I have supported, and the ACRS has recommended, a continuing review and evaluation of the state of the seismic art and science as it develops and relates to Diablo Canyon over the next several years.

In particular, I would note that the recent scientific paper, discussed in some detail at the last meeting of the Commission, apparently indicates that, although the Hosgri fault may be somewhat closer than previously thought to the Diablo Canyon site, the probability is that a large, 7.5 Richter-magnitude quake would, under this latest hypothesis, be less frequent than previously thought. I therefore find no reason, based on this latest of what I am sure will be many more papers on California geology and seismology, to change my position on the seismic adequacy of the Diablo Canyon plant. I have reached that conclusion on the basis of my personal inspection of the plant, the recommendation of the ACRS, and the consensus of expert opinion.

Another important issue is that Commissioner Gilinsky raises in respect to operator qualifications. No one questions the legitimacy of that issue, and indeed, the Commission is currently considering the question of how best to achieve not just adequacy, but excellence at all levels in nuclear powerplant operating staff qualifications. But the question here is not how PG&E and other utilities will achieve uniform excellence in the months and years ahead, but whether PG&E in its Diablo Canyon operations today has achieved a standard that is, beyond a reasonable doubt, adequate to protect the public health and safety. I believe it has achieved that standard. What they have achieved is good, if not perfect. I would add that, consistent with the strong expressed desires

of Commissioner Gilinsky, I believe the Commission does owe this licensee, as it does all our licensees, a clear statement, and soon, of those further steps to be taken along the road to excellence in the operator corps as this licensee prepares for full power operation.

It must be emphasized in this context that the Commission meeting this morning was not intended to address, nor is there any specific or implied need to address for low-power operations at Diablo Canyon, the question of the Commission's longstanding regulation, 10 CFR §55.25, and the definition and practical application of that regulation in satisfying the literal requirement for "extensive actual operating experience at a comparable reactor."

The fact is, the Commission has either implicitly or explicitly concurred in the evolving application of §55.25 since its promulgation more than 20 years ago. The fact is, §55.25 was promulgated at a time when reactor simulators were not generally available. The fact is, in a 1967 memorandum, the General Counsel's office explicitly concurred in the criteria which the staff were then applying in determining whether §55.25 was satisfied or not. The fact is, the Commission participated in the development of the ANSI standard which provided that simulator training was an acceptable means of acquiring necessary experience. The regulatory guides which endorsed that ANSI standard as a method of complying with the requirements of §55.25 were published in their final form only after solicitation and consideration of public comments. Further, the Commission was explicitly informed by the staff of the planned issuance of NUREG-0094 in June, 1976.

It is both understandable and eminently reasonable that the prerequisites for operator licensing should change as the state of the art in operator training techniques changes. Indeed, there are good reasons to rely heavily on simulator training as a prerequisite for operator licensing, not the least of which reasons is that in many respects the use of a simulator is superior to experience gained actually sitting at the controls of a power plant. Given the background of operator licensing criteria applied by this agency for the past 20

years and the implicit, if not explicit, concurrence of the Commission in the application of those criteria, the suggestion that any near term operating license applicant should have a license denied or delayed because the Commission has suddenly changed its mind about what constitutes adequate operator qualification would be irresponsible, and would violate fundamental principles of fairness. The Commission has known exactly what it has been doing for 20 years, what it is doing today, and what it intends to do with regard to operator training. The operators at Diablo Canyon meet Commission standards today, and will be required to meet what may well be upgraded standards yet to be adopted by the Commission in future regulations or regulatory guidance.

Finally, I would address the concerns raised by Mr. Yin at the last meeting of the Commission, and seemingly resolved during the intervening two weeks. I do not interpret Mr. Yin's carefully considered position to reflect total agreement with his colleagues on all technical issues. I would be surprised, and frankly a little concerned, if there were ever total agreement within our staff on such issues. But I do understand that there is now essential agreement on an action plan and timetable for resolution of the remaining questions, and more importantly, agreement that those remaining questions and differences should not preclude criticality and 5% operation. I would caution that we are never entirely out of the woods in such matters, but I believe we have made significant progress, sufficient to act affirmatively to reinstate the suspended license of Diablo Canyon.

There has been a worthwhile and necessary process underway during the two weeks spent resolving Mr. Yin's questions, with the help of the expert third party oversight of the ACRS. I doubt, incidentally, that Mr. Yin considers himself, as some have characterized him, a "whistleblower". Rather, he is a professional member of the NRC's own technical staff who has openly expressed several times over the last four months, his professional disagreement with other staff on a number of technical issues. That is as it should be. But although the issues had been on the table for months, and had been discussed extensively, they apparently had not been discussed sufficiently prior to the

Commission's March 27 meeting. So if I may proffer one plea, to put it kindly, to our staff and especially to the senior staff, it would be that in future, when such professional disagreements exist among staff, if the Commission is expected to resolve them in a meeting, then the Commission must have the benefit of an active debate. Such a debate cannot occur when intrastaff communications have been poor, and when there is not even agreement on what the disagreements are.

4/13/84

LIC. AMENDMENT 8
6 COMPONENT COOLING
WATER

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

APR 13 1984

Docket No.: 50-275

Mr. J. O. Schuyler, Vice President
Nuclear Power Generation
c/o Nuclear Power Generation, Licensing
Pacific Gas & Electric Company
77 Beale Street, Room 1435
San Francisco, California 94106

Dear Mr. Schuyler:

Subject: Issuance of Amendment No. 8 to Facility Operating License
No. DPR-76 (Diablo Canyon Nuclear Power Plant, Unit 1)

By letter dated July 1, 1983 the Pacific Gas and Electric Company requested a change to the Appendix A of the Technical Specifications for the Diablo Canyon, Unit 1 Nuclear Power Plant. The change would require certain actions to be taken if the ocean water temperature exceeds 64°F to ensure adequate ultimate heat sink capacity. We have completed our review and evaluation of the proposed change and conclude that it is acceptable.

As you know, a notice was published in the Federal Register regarding the above requested change. No comments or petitions have been received with respect to the notice in connection with the action covered in this agreement. In addition, this matter was a subject of the Appeal Board's recent decision, ASLAB-763, March 20, 1984 which requires incorporation of this Technical Specification change prior to authorization of plant operation.

Accordingly, the Commission has issued the enclosed Amendment No. 8 to Facility Operating License No. DPR-76 for Diablo Canyon Nuclear Power Plant, Unit 1. A copy of the Safety Evaluation Supporting this amendment is also enclosed.

Sincerely,

Original signed by
George W. Knighton

George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

Enclosures:

1. Amendment No. 8 to Facility
Operating License DPR-76
2. Safety Evaluation

cc: See next page

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Diablo Canyon

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PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-275
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 8
License No. DPR-76

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Pacific Gas and Electric Company (the licensee) dated July 1, 1983, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. DPR-76 is hereby amended to read as follows:

941250009

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 8 are hereby incorporated in this license. The Pacific Gas & Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:
George W. Knighton

George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

Date of Issuance: APR 13 1984

APR 13 1964

- 3 -

ATTACHMENT TO LICENSE AMENDMENT NO. 8

FACILITY OPERATING LICENSE NO. DPR-76

DOCKET NO. 50-275

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by Amendment Number and contain vertical lines indicated the area of change. Also to be replaced are the following overleaf pages to the amended pages.

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PLANT SYSTEMS

3/4 7.12 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.12 The ultimate heat sink (UHS) shall be OPERABLE with an inlet water temperature of less than or equal to 64°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

With the requirements of the above specification not satisfied, place a second vital component cooling water heat exchanger in service within 8 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.12 The UHS shall be determined OPERABLE by verifying the inlet water temperature to be within its limit:

- a. At least once per 24 hours when the inlet water temperature is equal to or less than 60°F, or
- b. At least once per 12 hours when the inlet water temperature is greater than 60°F but less than 62°F, or
- c. At least once per 2 hours when the inlet water temperature is equal to or greater than 62°F but less than or equal to 64°F.

PLANT SYSTEMS

BASES

3/4.7.11 AREA TEMPERATURE MONITORING

The area temperature limitations ensure that safety-related equipment will not be subjected to temperatures in excess of their environmental qualification temperatures. Exposure to excessive temperatures may degrade equipment and can cause loss of its OPERABILITY. The temperature limits include allowance for an instrument error of 1° F.

3/4.7.12 ULTIMATE HEAT SINK

The OPERABILITY of the Component Cooling Water (CCW) System and the components that it cools is ensured if the CCW temperature remains equal to or less than 132°F during any condition assumed in the safety analysis. One CCW heat exchanger is required in service when the ocean temperature is 64°F or less. Two CCW heat exchangers are required in service when the ocean temperature is greater than 64°F. If the reactor coolant temperature is less than 350°F (MODE 4), one CCW heat exchanger in service is adequate even if the ocean temperature is greater than 64°F.

SAFETY EVALUATION

AMENDMENT NO. 8 TO DPR-76

DIABLO CANYON NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-275

Introduction

By letter dated July 1, 1983 the Pacific Gas & Electric (PG&E) Company requested an amendment to the Diablo Canyon, Unit 1 Technical Specifications that would require certain actions to be taken if the ocean water temperature exceeds 64°F to ensure adequate ultimate heat sink capacity.

Evaluation

In response to concerns raised about the heat removal capability of the Component Cooling Water System (CCWS), PG&E in letters dated March 18, April 4, and May 18, 1983, provided the results of a re-analysis of the heat removal capability of the CCWS assuming the worst design-basis heat load (i.e. LOCA), and the most limiting single failure. PG&E further committed to placing a Technical Specification on a 64°F ocean water intake temperature with appropriate surveillance, limiting conditions for operation, action statements, and bases. In the event the ocean water temperature should exceed 64°F, the proposed change would require placing a second component cooling water heat exchanger in service within eight hours or be in at least HOT STANDBY within the next six hours and in at least HOT SHUTDOWN within the next six hours.

The staff evaluation of the above concerns, including the proposed technical specification, was provided in Supplement No. 16 (dated August 1983) to the Safety Evaluation Report for Diablo Canyon (NUREG-0675, Supplement 16) which concluded that the proposed Technical Specification of 64°F and the associated actions were acceptable and would provide adequate assurance of the component cooling water heat removal capability.

Contact With State Official

By copy of a letter dated October 11, 1983 to the licensee, the NRC staff advised the Chief of the Radiological Health Branch, State Department of Health Services, State of California, of its proposed determination of no significant hazards consideration. No comments were received.

Environmental Consideration

We have determined that this amendment does not authorize a change in effluent types or total amount nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that this amendment involves action which is insignificant from the standpoint of environmental impact and pursuant 10 CFR Section 51.5(d) (4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

Based upon our evaluation of the proposed change to the Diablo Canyon Nuclear Power Plant, Unit 1 Technical Specifications, we have concluded that: there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public. We, therefore, conclude that the proposed change is acceptable.

Dated: APR 13 1984

LIC. AMENDMENT 9
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 18 1984

Docket No.: 50-275

Mr. J. O. Schuyler, Vice President
Nuclear Power Generation
c/o Nuclear Power Generation, Licensing
Pacific Gas & Electric Company
77 Beale Street, Room 1435
San Francisco, California 94106

Dear Mr. Schuyler:

Subject: Issuance of Amendment No. 9 to Facility Operating License No. DPR-76
(Diablo Canyon Nuclear Power Plant, Unit 1)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 9 to the Facility Operating License No. DPR-76.

The amendment includes two license conditions. The first condition is for a revalidation program for the seismic design bases for the Diablo Canyon Nuclear Power Plant. We are currently drafting more detailed requirements that should be included in your program. We will meet with you in the near future to discuss this matter. We intend to meet also with the ACRS on this matter and will brief the Commission at a later date.

The second license condition is for additional jet impingement analyses by Pacific Gas & Electric for certain lines within the containment in accordance with the Atomic Safety and Licensing Appeal Board decision ALAB-763 of March 20, 1984. We have received your response to that requirement (PG&E letter DCL-84-137, dated April 9, 1984) and are currently reviewing the information to assure that your analyses are fully responsive to this requirement. This license condition must be resolved prior to the issuance of a license authorizing operation at power levels above 5%.

A condition relating to the component cooling water system, also contained in ALAB-763, was previously incorporated in Amendment No. 8 to Facility Operating License DPR-76, issued April 13, 1984.

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In its Memorandum and Order of April 13, 1984, the Commission determined that your request for extension of the expiration date should be granted. As noted by the Commission:

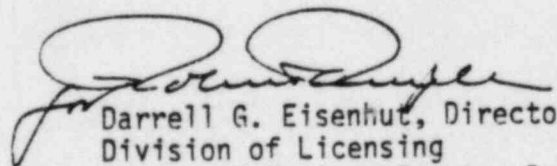
"The staff safety evaluations, testimony and views of the parties, and adjudicatory proceedings that have been held in this proceeding are all applicable, to the extent relevant, to PG&E's extension request. The Commission finds that the previous adjudicatory hearings that have been held satisfy the hearing requests that have been filed with regard to PG&E's extension request and that, because PG&E's extension request does not raise any health, safety or environmental issues that have not been resolved previously, that extension request should be granted."

Accordingly, the enclosed amendment approves the extension of the expiration date in accordance with your request of August 17, 1983.

The Commission has determined that the issuance of the amendment will not result in any environmental impacts other than those evaluated in the Final Environmental Statement since the activity authorized by the license is encompassed by the overall action evaluated in the Final Environmental Statement.

Enclosed is a copy of the related Notice which has been forwarded to the Office of the Federal Register for publication.

Sincerely,



Darrell G. Eisenhower, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 9 to
Facility Operating
License No. DPR-76
2. Federal Register Notice

cc: See next page

Diablo Canyon

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

PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-275
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 9
License No. DPR-76

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A.1 The applications for amendments dated August 3, 1982 and August 17, 1983 by Pacific Gas & Electric Company (the licensee) for extending the expiration date of the low power license comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter 1;
 - A.2 The requirement for revalidating the seismic design bases is made a license condition in accordance with the Commission's vote at a meeting on March 27, 1984 and in accordance with the Commission's Memorandum and Order CLI-84-5, dated April 13, 1984;
 - A.3 The requirement for appropriate jet impingement analyses for certain lines inside the containment is made a license condition in accordance with the decision ALAB-763 of March 20, 1984 by the Atomic Safety and Licensing Appeal Board;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

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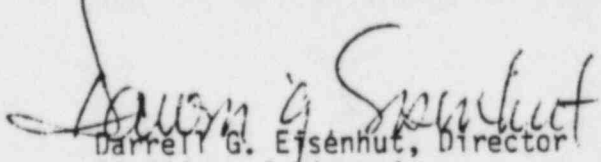
- D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, Facility Operating License No. DPR-76 is hereby amended as follows:
- A. Section 2.F is to read as follows:
 - F. This license is effective as of September 22, 1981 and shall expire three years after that date.
 - B. A new Section 2.C.9 is added to read as follows:
 - (9) Seismic Design Bases Revalidation Program

PG&E shall develop and implement a State-of-the-Art Program to revalidate the seismic design bases used for Diablo Canyon. PG&E shall submit for NRC staff review and approval the proposed Program Plan and proposed schedule for implementation by January 30, 1985. The program shall be completed and a final report be submitted to the NRC by July 1, 1988.
 - C. A new Section 2.C.10 is added to read as follows:
 - (10) Jet Impingement Analyses

Prior to the issuance of a license authorizing operation at power levels above five percent the licensee shall perform appropriate jet impingement analyses for certain lines inside the containment.

This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Darrell G. Eisenhower, Director
Division of Licensing
Office of Nuclear Regulatory Commission

Date of Issuance: **APR 18 1984**

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-275PACIFIC GAS & ELECTRIC COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITYOPERATING LICENSE

On September 22, 1981, the U. S. Nuclear Regulatory Commission (the Commission) issued Facility Operating License No. DPR-76 to the Pacific Gas and Electric Company (the licensee) for operation of the Diablo Canyon Nuclear Power Plant, Unit 1 (the facility) located in San Luis Obispo, California, limited to five percent of full power (166.9 megawatts thermal).

On November 19, 1981, the Commission suspended the license pending the completion of an independent design verification program. The Commission on April 13, 1984, reinstated the license and indicated that the expiration date of the license should be extended in accordance with the Licensee's request. As part of this decision the Commission also decided to amend the license to provide an additional condition related to the revalidation of the seismic design bases for the facility. In addition, the Atomic Safety and Licensing Appeal Board, in its decision of March 20, 1984, required appropriate jet impingement analyses.

The application for the license complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations. The Commission has made appropriate findings as required by the Act of and the Commission's Regulations in 10 CFR Chapter 1, which are set forth in the amended license. Prior public notice of the overall action involving

the proposed issuance of an operating license was published in the Federal Register on October 19, 1973. The extension of the expiration date authorized by this amendment and the conditions contained therein are encompassed by that prior notice. The Commission has determined that the issuance of the amendment will not result in any environmental impacts other than those evaluated in the Final Environmental Statement since the activity authorized by the license is encompassed by the overall action evaluated in the Final Environmental Statement.

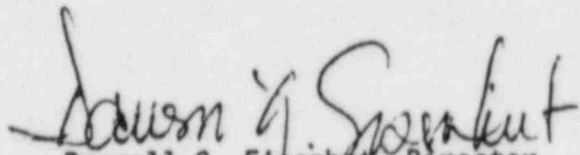
For further details with respect to this action, see (1) the Commission's Safety Evaluation Report, dated October 16, 1974, and Supplements 1 through 22; (2) the Final Safety Analysis Report and Amendments thereto; (3) the Final Environmental Statement, dated May 1973 and supplements thereto; (4) the Partial Initial Decision of the Atomic Safety and Licensing Board, dated July 17, 1981; (5) the Decision of the Atomic Safety and Licensing Appeal Board dated March 20, 1984; and (6) the Commission's Memorandum and Order dated April 13, 1984.

These items are available at the Commission's Public Document Room, 1717 H Street, N.W., Washington, DC 20555, and at the California Polytechnic State University Library, Documents and Maps Department, San Luis Obispo, California 93407.

- 3 -

Dated at Bethesda, Maryland this 18th day of April, 1984.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in dark ink, appearing to read "Darrell G. Eisenhower". The signature is written in a cursive style with a large, stylized "D" and "E".

Darrell G. Eisenhower, Director
Division of Licensing
Office of Nuclear Reactor Regulation

NR ORDER 4/18
8



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

APR 18 1984

Docket No.: 50-275

Mr. J. O. Schuyler, Vice President
Nuclear Power Generation
c/o Nuclear Power Generation, Licensing
Pacific Gas & Electric Company
77 Beale Street, Room 1435
San Francisco, California 94106

Dear Mr. Schuyler:

Subject: Order to Modify Facility Operating License No. DPR-76
(Diablo Canyon Nuclear Power Plant, Unit 1)

The Nuclear Regulatory Commission has issued the enclosed Subject Order. The Order sets forth License Condition 2.C.(11) which amends the license. The condition pertains to certain piping and piping support efforts that must be completed by Pacific Gas & Electric Company prior to Diablo Canyon Unit 1 operating above 5 percent of rated power.

The staff intends to audit and evaluate your efforts as they progress, including observation of the plant walkdowns. We request that you inform us as early as possible of your schedule for the hot walkdown of the main feedwater system piping to be performed after exceeding 5 percent power.

The enclosed Order will be forwarded to the office of the Federal Register for publication.

Sincerely,

A handwritten signature in dark ink, appearing to read "Darrell G. Eisenhower", written over the typed name.

Darrell G. Eisenhower, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
Order to Modify Facility
Operating License No. DPR-76

cc: See next page

81/5529134

Diablo Canyon

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[7590-01]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

PACIFIC GAS & ELECTRIC COMPANY
(Diablo Canyon Nuclear Power
Plant, Unit 1)

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)
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)
)

Docket No. 50-275

ORDER MODIFYING LICENSE

I.

The Pacific Gas and Electric Company (PG&E or the Licensee) holds License No. DPR-76 which authorizes the Licensee to conduct low-power operation of the Diablo Canyon Nuclear Power Plant, Unit 1, at up to 5% of the facility's rated power. The license was issued on September 22, 1981, and was recently fully reinstated by the Commission after having been suspended in November 1981 pending the successful completion of an independent design verification program.

II.

During the staff's review of the results of the independent design verification program and other matters related to the readiness of Diablo Canyon Unit 1 for low-power operation upon reinstatement of the suspended license, a number of concerns were raised regarding the adequacy of the design and design control measures for piping and piping supports. In recent weeks, the Commission and the staff have devoted substantial

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attention to these concerns to ensure that the piping and piping supports would not pose an undue risk to public health and safety if Diablo Canyon Unit 1 were permitted to operate at low power.

Among its evaluations and inspections of the piping issue, the staff convened a peer review group of technical experts to review certain concerns raised by Mr. Isa Yin, an NRC inspector who had reported, on the basis of his review and inspection, inadequate compliance with design requirements, document controls and personnel training for piping and piping supports. The peer review group met with Mr. Yin, PG&E representatives, and some of the contractors involved in the independent design verification program. The group visited Diablo Canyon, and later met with Mr. Charles Stokes, a former employee at the Diablo Canyon Project site who had made allegations concerning the adequacy of small-bore piping and piping supports. The group later met with Mr. Yin to discuss the group's proposed findings. In addition to the staff's reviews and inspections of the piping and piping supports, the Advisory Committee on Reactor Safeguards (ACRS) met in public session on April 6, 1984, to hear from Mr. Yin, other members of the NRC staff, and Mr. Stokes.

The peer review group and the ACRS concluded that Mr. Yin's concerns did not warrant delaying low-power operation of Diablo Canyon Unit 1. Mr. Yin informed the ACRS that, upon further review of the matter, he did not believe that resolution of the piping issues required further deferral of the reinstatement of the low-power operating license for Diablo Canyon Unit 1. Accordingly, the Commission reinstated the low-power license on April 13, 1984. See CLI-84-5, at 4-6.

The peer review group, the ACRS, and Mr. Yin agree that the piping issue requires resolution prior to authorizing full-power operation of Diablo Canyon Unit 1. On the basis of the various reviews of this matter, the staff believes that a number of actions are necessary to ensure the adequacy of small and large-bore piping and pipe supports and to ensure correction of deficiencies, if any, before Diablo Canyon Unit 1 can be permitted to operate above 5% rated power.

III.

Accordingly, pursuant to sections 103, 161(i), 161(o), 182 and 186 of the Atomic Energy Act of 1954, as amended, and 10 CFR 2.204 and 10 CFR Part 50 of the Commission's regulations, IT IS HEREBY ORDERED THAT the Licensee shall not operate Diablo Canyon Unit 1 above 5% power until the Licensee has completed the specific actions which are set forth below in new License Condition 2.C.(11) to Facility Operating License No. DPR-76:

2.C.(11): Piping and Piping Supports

1. PG&E shall complete the review of all small-bore piping supports which were reanalyzed and requalified by computer analysis. The review shall include consideration of the additional technical topics, as appropriate, contained in License Condition No. 7 below.
2. PG&E shall identify all cases in which rigid supports are placed in close proximity to other rigid supports or anchors. For these cases PG&E shall conduct a program that assures loads shared between these

adjacent supports and anchors result in acceptable piping and support stresses. Upon completion of this effort, PG&E shall submit a report to the NRC staff documenting the results of the program.

3. PG&E shall identify all cases in which snubbers are placed in close proximity to rigid supports and anchors. For these cases, utilizing snubber lock-up motion criteria acceptable to the staff, PG&E shall demonstrate that acceptable piping and piping support stresses are met. Upon completion of this effort, PG&E shall submit a report to the NRC staff documenting the results.
4. PG&E shall identify all pipe supports for which thermal gaps have been specifically included in the piping thermal analyses. For these cases the licensee shall develop a program for periodic inservice inspection to assure that these thermal gaps are maintained throughout the operating life of the plant. PG&E shall submit to the NRC staff a report containing the gap monitoring program.
5. PG&E shall provide to the NRC the procedures and schedules for the hot walkdown of the main steam system piping. PG&E shall document the main steam hot walkdown results in a report to the NRC staff.
6. PG&E shall conduct a review of the "Pipe Support Design Tolerance Clarification" program (PSDTC) and "Diablo Problem" system (DP) activities. The review shall include specific identification of the following:

- (a) Support changes which deviated from the defined PSDTC program scope;
- (b) Any significant deviations between as-built and design configurations stemming from the PSDTC or DP activities; and
- (c) Any unresolved matters identified by the DP system.

The purpose of this review is to ensure that all design changes and modifications have been resolved and documented in an appropriate manner. Upon completion PG&E shall submit a report to the NRC staff documenting the results of this review.

7. PG&E shall conduct a program to demonstrate that the following technical topics have been adequately addressed in the design of small and large-bore piping supports:
 - (a) Inclusion of warping normal and shear stresses due to torsion in those open sections where warping effects are significant.
 - (b) Resolution of differences between the AISC Code and Bechtel criteria with regard to allowable lengths of unbraced angle sections in bending.
 - (c) Consideration of lateral/torsional buckling under axial loading of angle members.

- (d) Inclusion of axial and torsional loads due to load eccentricity where appropriate.
- (e) Correct calculation of pipe support fundamental frequency by Rayleigh's method.
- (f) Consideration of flare bevel weld effective throat thickness as used on structural steel tubing with an outside radius of less than $2T$.

PG&E shall submit a report to the NRC staff documenting the results of the program.

8. The Director, Division of Licensing, Office of Nuclear Reactor Regulation, may relax any of the foregoing conditions for good cause.

IV.

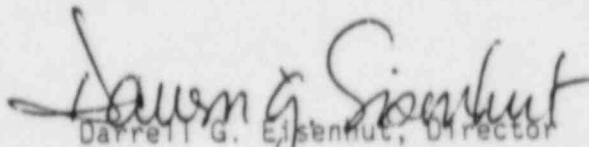
The Licensee may request a hearing on this Order. Any request for a hearing on this Order must be submitted within 20 days of the date of this Order to the Director, Division of Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555. A copy of the request shall also be sent to the Executive Legal Director, U.S.N.R.C., Washington, D.C., 20555.

If a hearing is to be held, the Commission will issue an Order designating the time and place of any such hearing. If a hearing is

held on this Order, the issue for hearing shall be whether this Order should be sustained.

This Order shall become effective without further proceedings upon the Licensee's consent to the Order or upon expiration of the period within which the Licensee may request a hearing. If the Licensee requests a hearing this Order shall be effective in accordance with an Order issued following further proceedings on this Order.

FOR THE NUCLEAR REGULATORY COMMISSION



Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 18th day of April, 1984.

PIPING REPORT
9

ACRES PIPING LTR.

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

April 9, 1984

Honorable Nunzio J. Palladino
Chairman
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Palladino:

SUBJECT: ACRS REPORT ON DESIGN CONTROL MEASURES AT THE DIABLO CANYON
NUCLEAR POWER PLANT

During its 288th meeting, April 5-7, 1984, the Advisory Committee on Reactor Safeguards reviewed the technical issues arising from the Diablo Canyon Licensee's design control measures for small and large bore piping, as requested in your letter dated April 4, 1984. During this review we had the benefit of presentations by members of the NRC Staff, including NRC Inspector Isa Yin, by representatives of the Pacific Gas & Electric Company (Licensee) and of the Independent Design Verification Program organizations, and by Mr. Charles Stokes, a member of the public. We also had the benefit of the documents listed.

We were informed that there is no longer disagreement between the NRC Staff and Mr. Yin. They now agree on a series of actions that must be completed by the Licensee and by the NRC Staff to resolve certain questions, and agree that these should be completed before operation at full power. They agree also that operation and low power testing at levels up to five percent of full power can be permitted without undue risk to the health and safety of the public.

We agree that it is acceptable to permit low power operation at this time. We believe that such operation will not compromise corrective actions that may be required.

We believe that the several actions proposed by the NRC Staff for completion before operation above five percent power will provide a suitable basis for considering operation at full power.

The Licensee has agreed to the actions proposed by the NRC Staff before operation above five percent power with one exception. This exception relates to the need for or desirability of "hot shimming" for closely spaced restraints on large bore piping. We believe that this requirement deserves further technical review and discussion between the NRC Staff and the Licensee.

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Honorable Nunzio J. Palladino

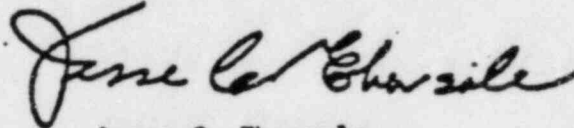
- 2 -

April 9, 1984

We understand that allegations such as those made by Mr. Stokes will be investigated and appropriately considered by the NRC Staff.

Additional comments by ACRS members Robert Axtmann, Jesse Ebersole, and David Okrent are presented below.

Sincerely,



Jesse C. Ebersole
Chairman

Additional Comments by ACRS members Robert Axtmann, Jesse Ebersole, and David Okrent

We agree with the ACRS conclusion on operation at five percent power.

In view of the limited time available for review of this matter, the bulk of documentation, and the lateness of some documents in reaching us, our review was of necessity limited in its depth.

Prior to an ascent in power above five percent, the NRC Staff should prepare a document discussing in considerable detail how the various relevant issues raised by its inspectors and others have been handled. The NRC Staff should also perform a careful examination of a selected sample of actual construction details to help assure that the appropriate quality has been accomplished.

We believe the ACRS should be given an opportunity to review these results prior to the achievement of full power at the Diablo Canyon Nuclear Power Plant.

References:

1. U. S. Nuclear Regulatory Commission Transcript of the March 26 and 27, 1984 meeting in the matter of Discussion/Possible Vote on Diablo Canyon Criticality and Low Power Operation, Pages 68-102, 233-256, 263, 279, and 281-287
2. U. S. Nuclear Regulatory Commission Transcript of the March 28, 1984 meeting between Staff, Applicant and Intervenor on Diablo Canyon, Pages 1-124
3. U. S. Nuclear Regulatory Commission Transcript of the meeting on April 2, 1984 in the matter of Pacific Gas & Electric Company on Diablo Canyon, Pages 1-272
4. I. T. Yin, "Diablo Canyon I, Summary of Findings Resulting From Follow-up of Allegations and NRC Independent Overview," Draft dated March 29, 1984

Honorable Nunzio J. Palladino

- 3 -

April 9, 1984

5. I. T. Yin, "Diablo Canyon 1, Draft Investigation/Inspection Report," Rev. 3, dated March 29, 1984
6. Memorandum, with enclosure, from Darrell G. Eisenhut, Director, Division of Licensing, U. S. Nuclear Regulatory Commission, to Chairman Palladino and Commissioners, U. S. Nuclear Regulatory Commission, Subject: Diablo Canyon - Allegations Concerning Small Bore Piping and Supports (Board Notification No. 83-171), dated October 27, 1983
7. U. S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of Diablo Canyon Nuclear Power Plant, Units 1 and 2," USNRC Report NUREG-0675, Supplement No. 22, dated March 1984
8. Exhibit A, "Affidavit of Charles Stokes," dated November 1983 to Motion to Atomic Safety and Licensing Appeal Board, "Joint Intervenor's Motion to Augment or, in the Alternative, to Reopen the Record" in the Matter of Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), dated February 14, 1984
9. Pacific Gas and Electric Company's Answer in Opposition to Joint Intervenor's Motion to Augment or, in the Alternative, to Reopen the Record in the Matter of Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2) without attachments, dated March 6, 1984
10. Letter No. DCL-84-131, from J. O. Schuyler, Pacific Gas and Electric Company to Mr. Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission, Subject: Response to Board Notification 84-071 on Diablo Canyon Unit 1, dated April 4, 1984
11. Summary of Remarks of Charles Stokes Before the Advisory Committee on Reactor Safeguards Concerning the Diablo Canyon Nuclear Power Plant, dated April 6, 1984
12. Letter No. P105-6 from Robert L. Cloud, Robert L. Cloud Associates, Inc., to Mr. G. A. Maneatis, Pacific Gas and Electric Company, Mr. H. R. Denton, U. S. Nuclear Regulatory Commission, and Mr. J. B. Martin, Region V, U. S. Nuclear Regulatory Commission, regarding allegations at Diablo Canyon, dated February 3, 1984

I. T. YIN
// TESTIMONY 6/14

Testimony Before
Subcommittee on Energy and the Environment
Committee on Interior and Insular Affairs
U.S. House of Representatives
on June 14, 1984
Prepared By: I. T. Yin

Mr. Chairman and members of the Congress, my name is Isa Yin. I am a Senior Mechanical Engineer in NRC's Region III, Division of Engineering.

Relative to the Diablo Canyon Nuclear Power Plant investigation effort, my assignment was to follow up on some of the allegations made by Mr. Charles Stokes. The specific investigation areas were restricted to site small bore (S/B) piping suspension system design control. However, due to hardware deficiencies observed during plant walkdown, the licensee design control measures for large bore (L/B) piping system were also included as a part of the overview inspection and evaluation.

On March 26-27, 1984, during the NRC Commission's meeting held to consider reinstatement of the licensee's low power test Operation License (OL), I brought to the Commission's attention the following issues which had not been adequately addressed:

1. Substantiation of design allegations. NRC overview inspections concluded that there had been significant QA program deficiencies in the areas of S/B and L/B piping design control.

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2. A large number of calculational errors and deficiencies had not been identified through various reviews and checking stages.
3. Diablo Canyon Project Organization's lack of implementation of a sound design control QA program which resulted in violation of NRC regulations in personnel training, document control, audits, design verifications, and raised questions in many technical and hardware related areas.
4. Reinspection, and necessary hardware re-work and modification could be performed with less complication prior to reactor criticality.

My testimony contributed to the Commissioners' decision to defer the OL reinstatement decision pending review by the ACRS.

Prior to the ACRS meeting held on April 6, 1984, an NRC peer review team was formed under the direction of Mr. Dircks, the NRC Executive Director for Operations. The peer review team reviewed all of the issues and discussed them with Pacific Gas and Electric Company (PG&E) representatives and with me. During the ACRS meeting, the staff presented a consensual view that:

1. It was acceptable to permit low power operation prior to completing corrective actions. Such operation would not compromise corrective actions and would not be a risk to the public health and safety.
2. Prior to operation above 5% power, the significant issues concluded by the NRC peer review team should be addressed and corrected by PG&E and evaluated and accepted by the staff.

The ACRS letter to the Commission, dated April 9, 1984, concurred with the staff position, and requested further review of staff rescission of the various relevant issues raised by NRC inspectors and others.

The low power OL was subsequently reinstated during the April 13, 1984 Commission hearing. The Commission also asked that the peer review team issues be included in a license amendment. This set forth License Condition 2.c.(11) in an Operating License Modification forwarded to PG&E on April 18, 1984.

Presently, the staff is working toward resolving the License Condition items, as well as Independent Design Verification Program (IDVP) concerns and programmatic issues raised by me.

1. The License Conditions included:

- a. Re-analyses and re-qualification of all S/B piping support computer calculations.
- b. Evaluation and shimming of closely spaced rigid to rigid restraints and anchors.
- c. Performing additional piping analyses to ensure functionability of snubbers that were installed in close proximity to rigid supports.
- d. Establishment of inservice inspection to maintain required thermal gaps within the rigid support structures throughout plant life.

- e. Staff observation of hot walkdown inspections of Main Steam and Residual Heat Removal Systems to ensure absence of structural interference.
- f. Review of "quick fix" significant design changes; and design criteria that were prescribed in informal "Diablo Problem" correspondence.
- g. Consideration of additional technical topics raised by allegations.

These issues are presently handled by the NRC staff.

- 2. My written concerns on possible inadequate IDVP for L/B and S/B piping stress analyses and support calculations, and seemingly insufficient followup evaluations after deficiencies had been identified were formally submitted to NRR management on April 25, 1984. Joint review of these concerns will be conducted by NRR, IE staff, and me.
- 3. In addition to the License Conditions, I believe there are other programmatic issues that could affect the quality of ongoing and future project activities. In my view, the following changes are warranted:
 - a. Improvement of site personnel indoctrination and training program as well as measures to be taken to ensure effective implementation of program requirements.

- b. More stringent control of site procedures, including removal of outdated documents, and avoidance of procedure revisions by unauthorized means, for example Inter-office memoranda.
- c. Upgrade of procedures to include better control of preliminary design data, design interfaces between site Stress and Support groups, and PG&E and Westinghouse.
- d. Improvement of timeliness of project responses to site personnel safety concerns, and QA audit findings. Corrective actions should include identification of underlying causes, and surveillance to prevent recurrence.
- e. Conducting more extensive QA program audits that will: (1) include broader scope and more in-depth review during the audit and prior to accepting audit finding corrective actions, and (2) ensure all aspects of design control requirements, such as design criteria, assumption, judgement basis, review, and approval are implemented in accordance with program provisions.
- f. Upgrade of Tolerance Clarification program (TC or commonly called Quick Fixes) to ensure that adequate design reviews will be made prior to major hardware modifications.

I have discussed these concerns with PG&E management and I am presently reviewing the licensee's actions. As it stands to date, followup actions are incomplete.

Mr. Chairman, and members of the Congress, I thank you for the opportunity to testify, and will truthfully answer any questions that you may wish to ask.

ISA YIN STATEMENTS

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

RELATED CORRESPONDENCE

DOCKETED
JUN 1984

APR 13 1984

'84 APR 13 P3:05

Docket Nos.: 50-275
and 50-323

OF SEC
JUN 1984
BY NRC

MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal

FROM: Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: DIABLO CANYON - STATEMENT BY MR. ISA YIN, NRC STAFF,
APRIL 11, 1984 (BOARD NOTIFICATION NO. 84-082)

In accordance with NRC procedures for Board Notifications the enclosure is provided for your information. The enclosure is a statement by Mr. Isa Yin of the NRC staff regarding conclusions and recommendations of an NRC Review Group that recently evaluated concerns expressed earlier by Mr. Yin.

By copy of this notification, the appropriate Board and parties to the Diablo Canyon proceeding are being provided a copy of this information.

Darrell G. Eisenhut
Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

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DS07

The Commissioners

- 2 -

cc: J. F. Wolf, ASLB
G. O. Bright, ASLB
J. Kline, ASLB
T. S. Moore, ASLAB
W. R. Johnson, ASLAB
J. H. Buck, ASLAB

SECY (2)

OPE

EDO

OGC

Parties to the Proceeding

DISTRIBUTION LIST FOR BOARD NOTIFICATION

Diablo Canyon Units 1&2
Docket Nos. 50-275/323 OL

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Mr. Glenn O. Bright
Dr. John H. Buck
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Mr. Frederick Eissler
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Mr. Lee M. Gustafson
Dr. Jose Roesset
Mr. Malcolm H. Furbush

Diablo Canyon 1

In the past two weeks there had been discussions among the staff and the PG&E representatives on matters concerning whether or not there had been a design control QA program breakdown in the design of large bore (L/B) and small bore (S/B) piping systems. To know the answer, one must first ask the following questions:

1. Had there been adequate personnel training program as well as effective implementation of the program at the site?
2. Was there a sound document control system?
3. Were there sufficient technical and QA procedures to cover all important aspects of design activities?
4. Did responsible personnel always follow established work procedures?
5. Were all components proven to be functionable in accordance with design intentions?
6. Were the licensee audits of design activities effective enough to identify problems for corrective measures?
7. Was licensee forceful in correcting identified problems?

The inspection findings documented in my incomplete draft report said "NO" to all the above questions.

In the past two weeks, I worked together with the Review Team consisted of NRR, IE, Regional management and technical staff. While the difference in professional opinion, in interpretation of regulatory requirements, and in the relative significance of various issues discussed in my draft report still existed, there was a consensus among the team members on what actions should be taken prior to full power operation. The compromises I have made included: (1) that improvement of program and component design could be carried out during low power testings, and (2) that the decision to reinspect all safety related piping systems to avoid structural interferences will be based on whether or not NRC's observation during MS and FW tests will identify any significant deficiencies. The action item list included the following:

- . Complete S/B support computer calculation review.
- . Complete shimming of closely spaced rigid supports, as necessary.
- . Establish program for monitoring thermal gaps, as necessary.
- . Review snubber lockup motions used to evaluate snubber/rigid restraint interactions.
- . Establish "Quick Fix" and "Diablo Problem" review program.
- . Staff inspection of MS and FW hot walkdown.

. Complete review of technical allegation issues.

. Complete regional inspection (including evaluation of IDVP).

The staff's present position regarding the S/B support computer performed calculations is that all 100% of them should be re-evaluated by DCP.. This is contrary to the Robert Cloud and Associates conclusion after the IDVP studies. They believe that no additional S/B support calculation was required even in the face of a large amount of identified computational deficiencies. The difference of licensing criteria interpretation and the degree of tolerance in accepting calculation input errors and deficiencies between the staff and Cloud is apparent. The nature of the deficiencies relative to the L/B support calculations documented in the Cloud Interim Technical Reports will be reviewed by the staff in the near future. Results from the review of this issue and five others that are also related to the L/B and S/B piping system design evaluations performed by Cloud will form the basis for determining whether or not there should be additional actions to be taken by the licensee.

Recently, there had been media and public concerns relative to my "surprise" testimony before the Commission, particularly the possibility of management suppression of inspection findings. Let me speak of the truth in this matter. My work performance in the NRC in the last 9½ years was well recognized inside and outside the organization. I had been decorated with NRC Meritorious Service Award and Special Achievement Award, and was sent to Korea and Taiwan to train their technical personnel. My assignment at Diablo Canyon showed that the NRC management really wanted knowledgeable staff to handle the case. During the past 4½ months of working on the case, there had not been any

management pressure to stop me from inspecting or investigating any matters that I felt were pertinent to the issues, and certainly there had not been any attempt made to discourage me from discussing findings with the Congressional staff, the licensee and the general public. Problems concerning some over-looking of the findings could have been caused by difference in professional opinion, and by the tremendous work loads that have burdened the understaffed NRR organization for so long.

All the experienced NRC inspection and enforcement staffers are aware that identifying licensee program and hardware deficiencies is only 40% of the task. It takes more effort to negotiate for upgraded programs and to follow up on implementation of corrective actions. Being a graduate from Cal Poly, 20 miles away from the Diablo Canyon site, it is my personal interest and commitment to work hard with the staff to resolve all identified issues and problems. Not until all improved programs have been implemented; all identified hardware problems have been corrected; and all reinspections have been conducted, you can certainly be assured that there will be no staff recommendation for the issuance of a full power commercial operation license.



4/11/84

Isa T. Yin
Senior Mechanical Engineer
Division of Engineering
Region III, NRC

Board Notification 84-069

Attachment 5

Statement by I. Yin
at NRC Commission Meeting
March 26, 1984

My name is Isa Yin. I am presently working in Region III, Division of Engineering as a Senior Mechanical Engineer. Relative to the Diablo Canyon Nuclear Power Plant (DCNPP) team investigation effort, I was assigned the responsibility of following up on some of the allegations made by Mr. Charles Stokes. The specific investigation areas were restricted to the site small bore (S/B) piping suspension system design control. However, due to hardware deficiencies observed during plant walkdown, the licensee design control measures for large bore (L/B) piping system had also been included as a part of the overview inspection and evaluation.

As a result of the investigation and inspection findings, it is my professional opinion that the Unit 1 reactor should not be permitted to go critical at this time. The reasons for such determination are as follow:

1. Almost all of the Stokes allegations assigned to me for followup had been substantiated. Based on the many assessed violations against the 10CFR50 Appendix B criteria resulting from followup on these allegations and the independent overview inspections, it was concluded that there had been apparent QA program breakdown in the areas of S/B and L/B piping design control.

2. Piping systems cannot be subjected to true functionality tests until after severe transient conditions, such as an earthquake, had occurred. The assurance of system operability relies principally on analytical methods. In spite of this dependence on theory and analysis, the lack of licensee L/B and S/B piping system design control that had resulted in an alarmingly large number of calculation errors and deficiencies that had slipped through various review and checking stages, is indicative of the failure of the Corrective Action Program conducted by the Diablo Canyon Project (DCP) group in the past two years.
3. Issues raised in responding to the staff's initial concerns were discussed during a meeting held with DCP personnel at NRC-NRR office on December 15, 1983. Discussions included onsite design personnel training, document control, audits, design verification, thermal loading release within the rigid restraint gaps, and snubber/rigid restraint interaction. At the time of the meeting, none of the issues was considered to be a problem by DCP. However, during followup inspections, all the above items had resulted in staff assessment of violation items. The event

reflected DCP's lack of concern for establishment and implementation of a sound design control QA program.

4. Hardware problems involving snubber and rigid restraint interaction that could make the snubber inoperable under design conditions were identified in La Salle Unit 1 just before the NRC operation license hearing, and had resulted in licensee filing of a 10CFR50.55(e) report, and removal and replacement of hundreds of large and small size mechanical snubbers. The DCP's position in regarding the same situations identified at DCNPP to be not a problem requires in-depth review and evaluation by the staff.
 5. At the present, with fuel loaded in the Unit 1 reactor, the access control including complicated security system, and the poor air quality resulted from system hot functional testings, makes inspection inside the containment difficult and intolerable. With the ^{expectation} ~~expectation~~ that there will be: (a) substantial amount of staff and licensee reinspection activities, and (b) some system hardware modification and re-work, to allow reactor low power testing before resolving the existing problems could discourage additional inspection effort and could hinder any required corrective actions.
- 1/11/78

H. MYERS ON
NSC AUDIT
13



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

APR 12 1984

Docket Nos.: 50-275
50-323

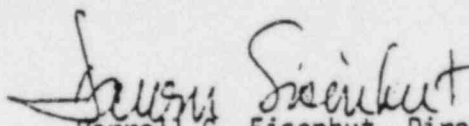
MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal

FROM: Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: DIABLO CANYON - ADDITIONAL QUESTIONS AND COMMENTS FROM
~~H. MEYER~~ (BOARD NOTIFICATION NO. 84-079)

In accordance with present NRC procedures for Board Notifications, the enclosed information is being transmitted to the Commission. The attached information (questions and comments) was received from Dr. H. Meyers a staff member for the U. S. Congress House Committee on Interior and Insular Affairs on April 12, 1984.

By copy of this notification, the appropriate Board and parties to the Diablo Canyon proceeding are being provided a copy of this information.


Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
As Stated

cc: See Next Page

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5

cc: J. F. Wolf, ASLB
G. O. Bright, ASLB
J. Kline, ASLB
T. S. Moore, ASLAB
W. R. Johnson, ASLAB
J. H. Buck, ASLAB
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Diablo Canyon Units 1&2
Docket Nos. 50-275/323 OL

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Mr. Malcolm H. Furbush

*Don
Secret*

conditions had not been noted during the course of the original inspection process? What was done to determine why the Pullman corporate audit had not noted the discrepancies noted by Audit 80422? Why did the Pullman corporate audit not discover the discrepancies? What was the basis for the 83-37 finding (stated on page 40) that Pullman had performed adequate corporate audits? What was the basis for the 83-37 finding (id.) that Pullman's internal and corporate audits had indicated that no fundamental QA program breakdown had occurred? (E.g. see 1978-79 findings re pipe rupture restraints per NCR's DC1-78-RM-008, DC1-78-RM-009, DC1-79-RM-003, etc.)

4. To what extent did recommendations listed on page 11 - 12 of Audit 80422 correspond to deficiencies noted in the NSC audit?

5. A May 29, 1979 memorandum from K. Freed to E. Gerwin addresses pipe rupture restraint problems. Why had welder deficiencies not be detected and corrected at an earlier date by Pullman's QC/QA program? To what extent are the noted welding deficiencies similar to those specified by the NSC audit?

6. What audits and/or reinspections hangers were conducted to determine whether the types of defects found in the pipe rupture restraints existed with respect to pipe hangers? What is the basis for a determination that defects found in pipe rupture restraints did not exist with respect to pipe hangers?

INTEROFFICE CORRESPONDENCE

TO E. Gerwin
FROM K. Freed *ck if NRC*
SUBJECT DIABLO CANYON RUPTURE RESTRAINTS

DATE May 29, 1979

I. Problems outside Pullman's responsibility

A) JOINT DESIGN (Primary Cause)

- 1) Massive weldments, 5" deep x 4 5/8" wide, at 45° single bevel that would shrink unrestrained about 1/2" in a transverse direction are totally restrained by huge columns and beams. All potential shrinkage is transformed into residual stresses and/or cracks.
- 2) Lateral reinforcement plates (stiffeners) are welded exactly opposite, both pulling on webs as thin as 1/2" and 3/4".
- 3) PG&E Department of Engineering Research (D.E.R.) has acknowledged joint design as the major problem by developing their investigation around six (6) joints classified by degree of restraint.

B) BASE MATERIAL (Secondary Cause)

- 1) Almost all "cracks" originated at lamellar tears in base material.
- 2) Some material has excessive rolled laminations.
- 3) PG&E supplied base material was inadequately identified prior to implementation of identification of base material.
- 4) Low melting point alloys formed with copper (in A441) and sulfides triggered some tears.

C) INDISCRIMINATE MATERIAL REMOVAL

- 1) Large Destructive test samples have been removed.
- 2) Some sections have been essentially destroyed chasing cracks.
- 3) No Proposed repair/replacement.
- 4) No consideration is given to how removal stresses other joints in same structure.

TO:

E. Gerwin

DATE May 29, 1979

SUBJECT:

DIABLO CANYON RUPTURE RESTRAINTS

PAGE NO.

2

(Cont'd)

D) CONCLUSION

- 1) Joint design can be improved by:
 - a) Smaller bevel angle.
 - b) Double bevel, if possible
 - c) Bracing with gusset plates to distribute area contracted upon.
- 2) Before removal a complete repair/replacement plan should be developed with special attention given to other joints in the structure.

II. Problems within Pullman's Q.A./Fabrication responsibility

A) PREHEAT (Early Secondary Cause)1) WELD PROCEDURE - 7/8

11/11/71 Spec. 8833XR requires AWS D1.0-69

Rev. 11/28/73 Preheat - 50°F. min., 175° over 1" & carbon over 30"

Rev. 10/15/76 Preheat references ESD 243 for AWS Welding

2) Q.A. VERIFICATION

11/11/71 Spec. 8833XR requires detailed "Q.A. Inspection Plans"

Rev. 2/01/74 ESD 243 not address preheat

Rev. 5/05/75 ESD 243 preheat now Q.A. hold point

Rev. 6/10/76 ESD 243 details preheats meeting and exceeding AWS D1.0-69

3) KNOWN DEVIATIONS

- a) PG&E audit observed welders not using correct preheat on 9/17/75 and on 9/19/75
- b) 8/3/77 Q.A. Inspector terminated after questionable documentation practices.
- c) 5/15/78 documented preheat of 150°F., required 225°F. (D.R. 3712).
- d) 9/25/78 documented preheat of 150°F., required 225°F. (D.R. 3798).

5x6

cc: A. Eck
H. Evans

1. AST

N.M. P.C.

TO:

E. Gerwin

DATE May 29, 1979

SUBJECT:

DIABLO CANYON RUPTURE RESTRAINTS

PAGE NO. 3

II. (Cont'd)

- B) Purported major welding and weld metal defects are not prevalent. One gross weld metal defect has been identified, that being a lack of fusion between two SMAW produced layers. Other defects exist but are inherent to the welding process (for example some porosity), are not detrimental and are well within acceptable limits. Confusion is occurring because PG&E NDE Technicians are calling lamellar tearing "lack of fusion" which it distinctly is not.

C) CONCLUSIONS

No documented control and inadequate control of required preheats were definite problems before 10/15/76. This likely contributed to cracking adjacent to fillet welds and may have contributed to cracks in heavy joints that originated in hardened heat affected zones. However, the major factor by far in heavy joints was poor joint design. The preheat situation is now under full Q.A. control, preheat hold points are being observed.

III. POINTS REQUIRING ACTION

- A) Stop indiscriminate material removal.
- B) Change contract and/or specification to include the additional examinations (M.T. and re-U.T.) being imposed.
- C) Evaluate cracked joints and develop method of bracing the joint to replace the portion of the joint that examinations reveal to be cracked.
- 1) Brace, gusset or plate to web.
 - 2) Arrange gusset shrinkage to take load off cracked area or even to put cracks in compression.
- D) Hire Welding Engineer for Diablo Canyon to implement rupture restraint repair program, control installation of heavy stanchions in Unit 2 and maintain quality welding program.

cc: A. Eck
M. Evans
T. Myers

LAST

K. J. Freed
K. J. Freed

TESTIMONY - 1/24
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