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NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of)

PACIFIC GAS AND ELECTRIC COMPANY)

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

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

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

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I. INTRODUCTION

On May 10, 1983, the Joint Intervenors filed a Motion to Reopen the Record On the Issue of Construction Quality Assurance ("CQA"). On May 17, 1983, Governor George Deukmejian, on behalf of the State of California, filed a similar motion to reopen the record. Both the NRC Staff and Pacific Gas and Electric Company ("PGandE") filed responses to those motions, and, at the Board's instruction, replies were filed by the Joint Intervenors and Governor Deukmejian on May 31, 1983.

In order to "resolve the apparent conflicts between the extensive affidavits and other documentary materials in support of and in opposition to the reopening motions and, in addition, to obtain answers to our questions concerning these materials," this Appeal Board scheduled a brief hearing on the pending motions which commenced on July 19, 1983 in San Luis

Obispo, California. Order, at 1 (June 28, 1983). At the conclusion of the hearing on July 22, 1983, the Board invited all parties to submit briefs "in support of or in response to the existing motions with regard to the Wolf Creek standard for reopening and how, if at all, any of the matters that have come forth in this hearing support or do not support that standard" Tr. 916 (July 22, 1983).

This brief is submitted in response to that invitation and in support of the pending motions to reopen the record. Given the extensive briefing to date of the motion and the limited time period allotted in which to prepare this brief, the Joint Intervenors will not reiterate herein matters already filed with the Board in our motion and supporting affidavits and documentation.^{1/} This brief is intended only (1) to highlight certain evidence adduced at the hearing on the motions and (2) to describe the legal standard applicable to this Board's consideration of such evidence.

II. SUBSTANTIAL EVIDENCE OF CQA DEFICIENCIES AT DIABLO CANYON CONSTITUTES SIGNIFICANT NEW INFORMATION RELEVANT TO SAFETY SUFFICIENT TO CHANGE THE RESULT.

In their May 10, 1983 Motion to Reopen the Record, the Joint Intervenors summarized the evidence then available that the Licensing Board's July 17, 1981 Partial Initial Decision was

^{1/} All prior filings by the Joint Intervenors and by Governor Deukmejian relating to and including the respective motions to reopen the record on CQA matters are incorporated herein by reference.

erroneous to the extent that it found that the Diablo Canyon CQA programs complied with the requirements of 10 C.F.R. Part 50, Appendix B. That evidence, which was described in several affidavits by Richard B. Hubbard and sworn statements by former H.P. Foley Company Quality Control personnel Virgil Tennyson and Richard Roam, has since been supplemented further by additional affidavits of Mr. Hubbard, as well as various PNO's and Notices of Violation issued by the NRC.^{2/} All of this evidence indicates significant failures in the CQA programs not only of PGandE but of certain of its contractors and subcontractors at Diablo Canyon.

As appears below, this new information regarding CQA failures at Diablo Canyon was confirmed by the evidence adduced at the hearing on the motions. Simply stated, the program breakdowns established by the documentation and testimony offered in support of the motions cannot logically be reconciled with the Licensing Board's prior approval; hence its finding of compliance with applicable regulatory standards cannot stand, and the record must be reopened.

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^{2/} See Declaration of Richard B. Hubbard on Breakdowns in Construction Quality Assurance at Diablo Canyon (May 6, 1983); Affidavit of Richard B. Hubbard (June 17, 1983); Joint Intervenor's Reply to Pacific Gas and Electric Company and NRC Staff Responses to Motions to Reopen On Issue of Construction Quality Assurance (June 17, 1983); Supplement to Joint Intervenor's Motion to Reopen the Record on the Issue of Construction Quality Assurance (July 6, 1983).

A. PGandE Has Failed to Establish and Implement a CQA Program Consistent With Applicable Regulatory Standards.

The record in this proceeding is clear regarding the Commission standards governing establishment and implementation of a quality assurance program. In 10 C.F.R. Part 50, Appendix B, the Commission has set forth specific quality assurance requirements in the form of eighteen criteria, which, if complied with, are intended to ensure adequacy of the final product. (Morrill, Tr. 878.) In addition, Criterion 1 of 10 C.F.R. Part 50, Appendix A, requires that a quality assurance program be established and implemented to ensure that all structures, systems, and components important to safety -- both safety-grade and nonsafety-grade -- will satisfactorily perform their safety function. (Memorandum, Standard Definitions for Commonly Used Safety Classification Terms (November 20, 1983) ("Denton Memorandum"); Hubbard, Tr. 189.) Finally, ANSI and WASH standards have been adopted which, although not necessarily binding in the sense of duly-promulgated regulations, provide detailed criteria adopted by the industry to implement applicable regulatory standards. (Bishop, Tr. 821; Raymond, Tr. 486.)

The record is far less clear, however, regarding the requisite assurance that PGandE has complied -- or has even committed to comply -- with these standards. As a general matter, in fact, the record suggests quite the opposite -- namely, that PGandE has failed to comply fully with any of those

standards as to Diablo Canyon Unit 1. According to the testimony of PGandE's former QA Manager, Warren Raymond, PGandE has interpreted Appendix B to permit them to undertake construction activities in Unit 1 not in compliance with applicable criteria even after Appendix B became effective in 1970. (Tr. 464-65.) Further, Mr. Raymond could not recall even one document in which PGandE committed to full compliance with Appendix B for Unit 1 construction. (Tr. 462.) Rather than attempt to comply with the letter of Appendix B for Unit 1 -- something PGandE apparently committed to do on Unit 2 -- PGandE unilaterally adopted for its own purposes a loophole by adding the phrase "as practicable" to the regulatory requirement of compliance. (Raymond, Tr. 482, 547-48a.) Mr. Raymond did not explain -- and the record nowhere reflects -- the actual degree of noncompliance with Appendix B resulting from this "as practicable" standard.

Similarly, with respect to Criterion 1 of Appendix A, any commitment of compliance by PGandE is conspicuously absent. Indeed, in the FSAR at Table 3.2-1 (PGandE Response, Exhibit 2), PGandE defines those SS&C's subject to Appendix A, GDC 1 and to Appendix B using virtually the same definition adopted by the NRC for safety-grade components; all other components not falling within that limited category of Class I components are

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"not required" to meet those QA standards.^{3/} Moreover, NRC witness Haas stated that:

[T]he license commitment we have from PGandE is to apply their quality assurance program for design and construction to safety-related structures, systems and components We don't review a program for [non-safety-related] items.

^{3/} See Denton Memorandum, where safety-related SS&C's are defined as follows:

Those structures, systems, or components designed to remain functional for the SSE (also termed "safety features") necessary to assure required safety functions, i.e.:

- (1) the integrity of the reactor coolant pressure boundary;
- (2) the capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (3) the capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposures comparable to guideline exposures of of this part.

PGandE's FSAR (Table 3.2-1) definition of Class II SS&C's -- explicitly stated as not subject to Appendix A, GDC-1, or Appendix B -- covers all plant features not falling within the foregoing definition of safety-related:

Plant features . . . not required to assure

- (1) the integrity of the reactor coolant pressure boundary,
- (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or
- (3) the capability to prevent or mitigate the consequences of accidents which could result in exposures comparable to the guidelines exposures of 10 C.F.R. 100.

Thus, plant features important to safety but not safety-grade would not, according to the FSAR, be subject to Appendix A and B QA/QC requirements.

(Tr. 864; accord: Bishop, Tr 865; Tennyson, Tr. 231; Haas, Tr. 813.) In fact, the Staff has itself decided to review PGandE's commitment to GDC-1. (Haas at 3.) Thus, there is no evidentiary basis upon which to find compliance with GDC-1 of Appendix A.

As to the applicable WASH and ANSI standards, PGandE's position is simply that it is not bound to comply. (PGandE Response, at 13.) In adopting such a view, PGandE has ignored the fact that such standards reflect not only good practices, but generally accepted industry procedures, adopted after years of study. Nonetheless, not until 1981 did PGandE commit to comply with ANSI N45.2.6, concerning inspector qualification, and even then it committed to comply only by full power operation, although the standard was adopted by the industry in 1973 (Raymond, Tr. 470, 480). Further, with respect to Unit 1, PGandE has never committed to comply with WASH 1309, which incorporates ANSI N45.2.6. (Raymond, Tr. 478-79.) Such testimony is fully consistent with the allegations made by Virgil Tennyson in his sworn statement to the State of California (Sworn Statement, at 14-15.)

In addition to this general testimony, evidence regarding numerous other specific examples of noncompliance with applicable standards was offered, confirming in substantial part the documentary evidence submitted in support of the motions. The following examples are illustrative:

- (1) The importance of management attitude and management assessment of QA implementation was recognized

by NRC Region V Deputy Administrator Faulkenberry (Tr. 867, 871-72), both to an adequate design QA program and CQA program. (Id.)^{4/} The NRC has recognized, however, the "lack of PGandE management periodic assessment of the effectiveness of QA program implementation," and in part on that basis it recommended that a CQA review "similar to the Reedy assesment" for design QA be undertaken.

(Faulkenberry, Tr. 689; 3/29/82 Memo, Engelken to Denton.)

Similarly, Reedy himself cited as key deficiencies in PGandE's QA program that (a) "PGandE management did not review and assess the effectiveness of the quality assurance program," and (b) PGandE "management review committees . . . did not review the QA program for design and construction of the Diablo Canyon plant." (Tr 869-70.)

(2) The existence of significant breakdowns in design quality assurance at Diablo Canyon suggests the possibility of similar breakdowns in CQA. This implication has been recognized not only by Richard Hubbard in his various affidavits, but by the NRC Staff as well. Most significantly, the March 29, 1982 memo from Engelken to Denton noted, in assessing the implications of the Reedy review of seismic design QA, that "the nature of the adverse findings regarding PGandE's own QA program, and

^{4/} Faulkenberry explained that management is important to QA because "I think in any activity, management attitudes are picked up at lower levels in a company and somewhat reflected in the quality of the product that is produced." (Tr. 867.)

particularly the lack of PGandE management periodic assessment of the effectiveness of QA program implementation, raises (implicitly at least) questions regarding the adequacy of these [on-site construction] programs." (Tr 872.) These implications were reiterated by NRC Staff witness Morrill in his testimony. (Id.) Further, PGandE's repeated claim to significantly greater confidence in its CQA program than its design QA program is difficult to reconcile with the testimony of its own witnesses that (a) PGandE management has had an equal commitment to design and construction activities (Dick, Tr. 407); (b) that PGandE QA Manager Raymond had responsibility for both design QA and CQA (Raymond, Tr. 528); and (c) that design and construction activities were governed by the same PGandE QA Manual (Raymond Tr. 401-02).

(3) Substantial evidence of PGandE's failure to control adequately its contractors -- see discussion infra regarding H.P. Foley Company -- establishes a clear breach of its obligations under Appendix B, GDC-1^{5/} and suggests

^{5/} Criterion 1 of 10 C.F.R. Part 50, Appendix B, requires in part that:

The applicant shall be responsible for the establishment and execution of the quality assurance program. The applicant may delegate to others, such as contractors, agents, or consultants, the work of establishing and executing the quality assurance program, or any part thereof, but shall retain responsibility therefor. . . .

further the inadequacy of its own QA program. Indeed, even IDVP Program Manager Cooper acknowledged -- albeit grudgingly -- that significant errors in the work done by the H.P. Foley Company would suggest the possibility that PGandE's own QA program was deficient, at least in its implementation. (Tr 741-42.)

Equally telling was the remarkable testimony of PGandE's On-Site QA Supervisor Richard Twiddy. Notwithstanding the conceded and undeniable deficiencies in Foley's QA program and the resulting significant welding nonconformances in the Fuel Handling Building and the Unit 1 containment annulus (see PGandE Supplemental Response to March 29, 1983 Notice of Violation, at 3), PGandE's Twiddy refused to concede any responsibility by PGandE for such deficiencies, choosing instead to lay the blame for Foley's "quality breakdown" on one individual, Virgil Tennyson. (Tr. 570.) Rather than acknowledge PGandE's ultimate responsibility for use of unqualified inspectors by its contractors, Twiddy characterized as "unreasonable" any suggestion that PGandE might check the individual qualifications of contract inspectors (Tr. 570); similarly, he disavowed any obligation to take action if informed by a contractor that it was having difficulty finding qualified inspectors (Tr. 599).

Although he found "very obvious" the fact that Tennyson was not "doing his job" as QA Manager for Foley, Twiddy never once suggested to Foley that Tennyson be

removed, characterizing the problem instead as one of "personnel" solely within the responsibility of the contractor. (Tr. 596-97.) Because of Tennyson's strict adherence to QA procedures, Twiddy branded him a "complainer" and simply dismissed him as someone demanding attention for reasons other than legitimate concern for quality. (Tr. 575-76.)^{6/}

Twiddy also disavowed any knowledge of excessive work hours by welders or inspectors (Tr. 597), despite the allegations to that effect by Tennyson and Roam and the NRC's own findings that 90% of all inspectors and supervisors for Foley were working in excess of 60 hours per week. Nor could Mr. Twiddy even recall whether assurances regarding measures to reduce excessive work hours had been given by PGandE to the NRC at a recent exit meeting. (Tr. 603.) His apparent ignorance of the situation may, of course, stem from the fact that he personally did not consider a 70-hour work week "excessive." (Tr. 627.) Nor apparently did Mr. Twiddy feel that a five-month delay in reporting a potential minimum wall thickness violation in RCS piping was excessive; despite the issuance by the NRC of a Notice of Violation

^{6/} The fact that Tennyson would be viewed in this light by PGandE's site QA supervisor reflects poorly on PGandE's management attitude regarding QA/QC. This poor attitude is not inconsistent, however, with Roger Reedy's findings regarding PGandE management or with past NRC experience. See discussion supra at 7-8.

for PGandE's five-month delay, Twiddy claimed that "we at PGandE are just over-reacting to reportability requirements of the NRC." (Tr. 581.)^{7/}

The Joint Intervenors find Mr. Twiddy's views more than a little unsettling. Such testimony by someone in his position shows a patent disregard on the part of PGandE for its QA/QC obligations under the regulations. Such disregard lends further credence, however, to the testimony of other witnesses about PGandE failures to supervise adequately its contractors with respect to QA/QC. For example, Virgil Tennyson testified in deposition and at the hearing regarding PGandE's affirmative instruction to Foley that it need not fully comply with Appendix B or with ANSI N45.2.6 (Sworn Statement, at 14-15; Tr. 215); further, he testified that scheduling pressure from PGandE on Foley personnel had resulted in a violation of the Appendix B criterion regarding independence between production and quality control. (Tr. 229.) Even with respect to so significant and obvious a deficiency as the numerous weld nonconformances in the Fuel Handling Building, NRC witness Hernandez testified that PGandE had failed to "make th[e] judgment that there was a widespread serious problem in

^{7/} Mr. Twiddy seemed almost oblivious to the significance of the problems that have characterized Foley's performance at Diablo Canyon. Using a scale of one to ten, he rated Foley at "nine." Tr. 605. Particularly in light of Foley's recent welding and QA/QC deficiencies, Mr. Twiddy's confidence in Foley suggests only that he himself has a very low standard of QA/QC performance.

that area." (Tr 826.) On that basis, the NRC concluded that a notice of violation was warranted. (Id.)

(4) PGandE's unprecedented "big push" from December 1982 through the present has resulted in wideranging QA/QC violations, including a breakdown of any semblance of independence between production and quality control.^{8/} From a workforce of 2,000 in September 1982, the number of workers onsite has grown to a "massive" 7,000 at the time of the hearing. (Hernandez, Tr. 827; Etzler, Tr. 655-57.) This increase -- to a level higher than at any time even during peak plant construction (Etzler, Tr. 655) -- resulted from PGandE's attempt to meet a self-imposed production schedule that virtually ensured the breakdown in quality which has in fact occurred. According to Tennyson, heightened pressure on workers and inspectors, inadequately trained welders, inexperienced inspectors, worker health problems, and noncompliance with QA procedures occurred during the period of the "big push,"

^{8/} Mr. Tennyson testified as follows regarding the importance of independence between construction and quality control and its conspicuous absence at Diablo Canyon:

MR. TENNYSON: It's very important that quality can locate a problem, write the problem up, initiate it and be able to disposition it and work it out with management without interference of management telling you exactly how they want it.

MR. REYNOLDS: Do you feel that at Diablo Canyon during the big push there was that kind of interference?

MR. TENNYSON: Yes, I do.

Tr. 219-20.

which was, in essence, the result of PGandE's scheduling demands. (Tr. 265: see also Tr. 229-30.) Even PGandE has conceded that the insufficient ratio of QC inspectors to production workers and the resulting structural steel weld deficiencies were at least in part a product of "the build-up in the number of workers." (PGandE Supplemental Response to March 29, 1983 Notice of Violation, at 3.) Further, inadequately qualified welders were hired by Foley in an effort to keep pace with the accelerated level of construction activity. (Twiddy, Tr. 568-71; Tennyson, Tr. 216-17.) Such a trade-off of quality for speed in production is precisely the sacrifice that an adequate QA/QC program should avoid consistent with Appendix B, GDC-1.

(5) The installation at Diablo Canyon of approximately 11,000 raceway, instrument tubing, and instrument supports composed of Superstrut material of indeterminate quality and manufactured by a company that had no QA/QC program, represents a major breakdown in PGandE's own CQA program. Because many of these supports are used in conjunction with Class I equipment (Morrill, Tr. 881), its potentially serious impact on the safety of the facility cannot lightly be ignored. The record is uncontradicted that (a) Midland-Ross had no QA program for the manufacture of Superstrut (Tr. 882); (b) that the adequacy of the welds fabricated using such material is relied upon for Class I design (Knight, Tr. 884); (c) that under such circumstances, current practice would require a

program to ensure quality and performance (id.); (d) that such materials are not exempt from Appendix B requirements (Knight, Tr 886); (e) that virtually all of such supports were installed at Diablo Canyon after Appendix B became effective (Morrill, Tr. 886); (f) that no comparison to the 18 Appendix B criteria was performed by PGandE prior to installation (Morrill, Tr 890-91); and (g) that none of the examinations subsequently conducted have looked at the welding done by Midland-Ross (NRC Inspector Report Nos. 82-19, 42, at 4). The installation at Diablo Canyon of numerous potentially critical components without a prior determination of their quality represents a major violation of Appendix B requirements.

(6) PGandE's failure to control adequately its use of ultrasound techniques for testing of minimum wall thickness constitutes a violation of Appendix B, GDC-9. For a period of some seven months -- from December 1982 through June 1983 -- PGandE continually relied upon such techniques in measuring RCS piping thickness despite its awareness that such techniques are inaccurate where the initial measurement shows the pipe to be within a close tolerance. Under cross-examination, PGandE witnesses conceded that such techniques are used by construction personnel to measure pipe wall thickness (Dodd, Tr. 661, 665), but none was sufficiently familiar with the applicable procedures to know whether they contained a caveat regarding potential inaccuracies of the technique.

(Tr. 665.) Criterion 9 requires, as a minimum, that procedures be qualified such that the misuse of the procedure demonstrated by PGandE does not occur. (Hubbard, Tr. 76-82.)

(7) No reasonable assurance was provided by PGandE or the NRC Staff that the 26% discrepancy rate between as-built piping and the design isometrics disclosed in the 79-14 walkdown resulted only from a design QA breakdown. To the contrary, PGandE witnesses Etzler and Bain were unable to cite any documentation or study establishing that the corrected as-built drawings were ever transmitted by construction personnel to the engineering department for incorporation into the design isometrics. (Tr. 636-37.) Absent evidence that such actually occurred consistent with the obligations of the construction department, PGandE has failed to demonstrate definitively that the 79-14 discrepancies are irrelevant to the pending motions.

The foregoing examples suggest a continuing failure on the part of PGandE to recognize the importance of, and to implement, a rigorous and effective CQA/QC program. Rather than adopting a careful and methodical corrective action program for the modification of Diablo Canyon, PGandE has undertaken an unprecedented construction "blitz" in an attempt to undo in a period of months the mistakes of over a decade of design and construction. In so doing, it has, in effect, rendered inevitable the kinds of quality breakdowns that necessarily

accompany massive influxes of construction and inspection personnel, many of whom have apparently not received adequate training and are not now receiving adequate supervision. The trade-off is obvious: speed in production at the expense of quality. Because PGandE continues to opt for speed, quality continues to suffer at Diablo Canyon. Those who object -- such as Virgil Tennyson -- risk being branded as "complainers," and their concerns are dismissed. Thus, the breakdowns recognized in design continue to characterize construction as well.

Under these circumstances, there can be no reasonable assurance of adequate compliance with applicable regulatory standards. Accordingly, the record must be reopened.

B. The Howard P. Foley Company Has Failed to Establish and Implement a QA/QC Program Consistent With Applicable Regulatory Standards.

The Howard P. Foley Company has served as a contractor at Diablo Canyon since 1970 or 1971. (Bain, Tr. 433.) Although initially hired to do electrical work, it took on the responsibility of completion contractor in 1976 or 1977, and it has since been responsible for a range of work, including heating and ventilation systems, raceway supports, conduits, instrumentation, structural steel, carpentry, and welding. (Twiddy, Tr. 574; Bain, Tr. 433.) In short, it has been and continues to be one of the principal contractors at Diablo Canyon.

The record is replete with evidence of undisputed deficiencies in Foley's QA/QC program. In addition to the numerous detailed allegations made by the former top QC personnel for Foley, witnesses for the NRC Staff, PGandE, and Governor Deukmejian have all acknowledged the existence of QA/QC failures. For example, NRC Deputy Regional Administrator Faulkenberry concluded that "the QA/QC program implemented by the site contractor, H.P. Foley, was not as intense and of the high quality desired" (Tr. 866), and he cited in support of that conclusion the higher number of noncompliances issued for Foley work, some of which he characterized as "repetitive." (Id.) NRC witness Hernandez testified that, regarding the number of Tennyson allegations substantiated by the NRC,^{9/} "the items

^{9/} In its report on the investigation of the Tennyson allegations (attached as an exhibit to the NRC Carlson affidavit), the NRC found "substantiated" or "substantiated in part" the following concerns expressed by Mr. Tennyson:

- (1) red hold tags in Fuel Handling Building;
- (2) weld quality;
- (3) routing of instrumentation tubing and electrical conduits;
- (4) installation of nonconforming material;
- (5) water in conduits leading to the intake structure;
- (6) weld quality on the Fuel Handling Building structural steel.

The NRC's rejection of some of the other concerns was decidedly unpersuasive. For example, although not substantiating the specific concern on welder certification, the NRC found a failure to assure that welder qualification is maintained in accord with procedural and code requirements, in violation of Appendix B, GDC-5. (Hernandez, Tr. 905-06.) Similarly, although the NRC found unsubstantiated the allegation on excessive work hours, it found that 90% of all inspectors were working hours in excess of 60 per week, with three working

[Footnote 9 continued]

are of concern to me because they tend to undermine the confidence that I would expect in the ability of the contractor to work in strict adherence to production and quality procedures [A] majority of the identified noncompliances involved a failure to adhere to established procedures." (Hernandez, at 2.)

PGandE witness Twiddy blamed the fact that the Foley program "broke down" on a failure of management. (Tr. 570.) In its Supplemental Response to the March 29, 1983 Notice of Violation, at 3, PGandE offered the following reasons for the widespread welding deficiencies found by the NRC in the Fuel Handling Building:

PG&E has investigated the findings of the reinspection program and has determined that there are two principle causes of the structural steel welding deficiencies. The first is insufficient training of new welders and new welding inspectors, in that they did not receive sufficient familiarization with all the acceptance criteria and that strict compliance with the criteria was required. The second is an insufficient ratio of QA inspector to production workers; this resulted from an undesirable distribution of inspectors, lack

[Footnote 9 continued]

up to 80 hours per week. (Tr. 897.) The concern regarding inspector to worker ratio prior to 1974 was rejected as unsubstantiated. However, the NRC's own February 26, 1974 inspection report -- Governor's CQ Ex. 9, at 10 -- supports the validity of the concern that in 1973 Foley had a QA staff of only three persons. (Tr. 832-33.)

Other concerns borne out by the record in this proceeding but rejected by the NRC include at least those relating to excessive production pressure and certification of inspectors.

of good supervision of the contractor Quality Control group, and was to some degree influenced by the build-up in the number of workers. Additionally, it was also found that three QC inspectors had not been properly qualified.

The most detailed and comprehensive testimony regarding the Foley QA/QC program was offered by former Foley QA Manager Tennyson. Consistent with his sworn statement to the State of California, Tennyson described a situation at Foley that makes virtually inevitable the kind of deficiencies in welding disclosed to date. Throughout his tenure at Foley, Tennyson felt no strong support from management for his QC efforts; to the contrary, he was repeatedly told that a QA program was a "necessary evil," which, if at all possible, would have been eliminated. (Tr. 221-223.) This attitude manifested itself continually in the form of pressure from Tennyson's immediate supervisor -- Foley Project Manager, Skip Moses -- to stop holding up the job, to short-cut QA procedures (e.g., pulling red tags prematurely), and to disregard the requirements of Appendix B and ANSI N45.2.6 (Tr. 214, 217, 239-40.) For example, despite repeated attempts to "level" inspectors to ANSI N45.2.6 standards, Tennyson was told not to do it, and, instead, inspectors were hired at least until 1979 based solely on "personal feeling." (Tr. 214, 287.)^{10/}

Although Tennyson believed there to be a lack of independence between production and QC (Sworn Statement, at

^{10/} Mr. Tennyson explained why he considered "levelling" of inspectors to ANSI N45.2.6 to be appropriate:

[Footnote 10 continued]

50-51; Tr. 229), he was told numerous times from 1974 to the present that it was not a violation of Appendix B, because total separation from production was not possible given the nature of the job. (Tr. 230.)^{11/} This lack of independence caused

[Footnote 10 continued]

MR. TENNYSON: We became more aware of it constantly at the plant, and being the quality manager and responsible for the inspectors and quality procedures and so on, I felt that we should go to ANSI -- the ANSI 45.2.6 standard for certifying our welders, our welding inspectors and just general inspection for the general inspection criteria.

MR. REYNOLDS: Did you expect that might improve quality to do that kind of levelling?

MR. TENNYSON: Yes, I definitely did.

(Tr. 214.) Mr. Tennyson's other testimony makes clear that this concern -- or "complaint," as PGandE's Mr. Twiddy might characterize it -- was not heeded by PGandE or by Foley. (Sworn Statement, at 14; Tr. 213-15.)

^{11/} Mr. Tennyson testified as follows:

MR. REYNOLDS: Did anyone from PGandE, or from Foley, ever suggest to you that it (inadequate independence between construction and quality control) was not a violation of the Appendix B criteria?

MR. TENNYSON: Yes. When I was first hired in 1974, February, this came about and I heard -- during that period of time, as I was an inspector and an engineer, quality engineer that is, Mr. Lemoyne E. Adelman was our project manager, and he explained to me that the Howard P. Foley Company did not have a corporate QA or QC program per se, and there was no one for the quality manager at Diablo for Foley to answer to or contact.

So, consequently, PGandE and the Foley Company had negotiated, evidently, a program where the quality manager would report directly to the project manager of the Howard P. Foley Company on site.

(Tr. 230 (emphasis added).)

significant pressure to be brought to bear on the workforce, to an extent "much more intense" than at any other job situation experienced by Tennyson. (Tr. 216, 219; Sworn Statement, at 50.) This pressure caused increased dissatisfaction among the workers, many of whom were working in excess of 60 hours per week. (Tr. 234-36.) In addition, simultaneous with the sudden influx of personnel during the "big push," Tennyson observed a considerable increase in unacceptable work by welders, giving rise to quality concerns both in the Fuel Handling Building and the annulus area of Unit 1 containment. (Tr. 236-38.) This pressure to expedite QC was undoubtedly the root cause of the repeated instruction to Tennyson to pull red tags and of the actual red tag incident which gave rise to the Notice of Violation issued by the NRC earlier this year. (Tennyson, Tr. 239-40, 251-52.)

Although compelled to acknowledge the existence of substantial welding nonconformances in the Fuel Handling Building and annulus area, PGandE has steadfastly refused to recognize that such nonconformances might be a consequence of its own seemingly obsessive concern for scheduling. Instead, PGandE seeks to rely on (1) the fact that Tennyson is a "complainer" and (2) that even Tennyson's own assertion that, despite the pressures, actual quality was unaffected. The response to these contentions is self-evident: the widespread welding problems are graphic evidence that (1) Tennyson's QA/QC concerns are for more than mere hollow complaints, and (2) that construction quality was in fact adversely affected by the pressures. To contend

otherwise simply ignores not only the predictable but the actual consequence of so unprecedented a construction increase as occurred during the "big push."

Although the NRC Staff has itself not explicitly conceded the relationship between production pressures and the deterioration of quality (Carlson, Tr. 903), it has at least recognized the undesirable effect that excessive work hours can have on quality (Carlson, Bishop, Tr. 898-900), and it has initiated discussions with PGandE to reduce the hours of its on-site workers. (Carlson, Tr. 900.) In addition, according to NRC Senior Resident Inspector Carlson, the question of whether production pressure is getting in the way of quality at Foley has apparently not yet been resolved even by the NRC, because it "will be evaluated by regional . . . and . . . headquarters management" and is still the subject of on-going review. (Tr. 909.)

Given Foley's inspection history of quality deficiencies and the extensive recent evidence of continuing failures to adhere to established standards and practices, there is no basis upon which to find reasonable assurance that Foley has established and implemented a QA/QC that complies with the requirements of 10 C.F.R. Part 50, Appendix A, GDC-1, and Appendix B. Accordingly, the Licensing Board's findings cannot stand, and the record must be reopened.

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C. The IDVP Review Fails to Provide Reasonable Assurance that PGandE and Its Contractors Established and Implemented a CQA Program Consistent with Applicable Regulatory Standards.

In its March 29, 1982 memorandum to Harold Denton, the Region V Staff recommended, based on the Reedy Report, "an assessment similar to the Reedy assessments for design consultants of the QA programs for at least two principal on-site construction contractors (Tr. 874.) Undoubtedly in partial response to this memo, PGandE announced on September 1, 1983 that a limited audit would be undertaken by the IDVP (TES/SWEC) to examine the CQA programs of G.F. Atkinson and Wismer and Becker.

Although the results of this review have been discussed in detail in the affidavits submitted in support of or response to the motions to reopen, evidence adduced at the hearing gives added perspective to the findings. First, substantial differences exist between the audit conducted by Reedy and that conducted by TES/SEC: (a) while Reedy examined the programs of PGandE and six of its contractors, TES/SWEC examined only two contractors; (b) while Reedy judged the programs based on current standards, TES/SWEC utilized the lesser standards in effect at the time the construction was done (Tr. 502-09); and (c) while Reedy explicitly undertook and documented a comparison of the QA programs to Appendix B standards, TES/SWEC, although claiming to have done such a review, at no point documented any such comparison (Cooper,

Tr. 743-44; Morrill, Tr. 876; Hubbard, Tr. 166), and even IDVP Manager Cooper admitted that he would not be surprised if as many as 11 of the Appendix B criteria could not be traced to the list of program attributes used by TES/SWEC as the basis for its review. (Tr. 750.) Even assuming that such a comparison to Appendix B was actually done, the failure of TES/SWEC to document or make available for public scrutiny its review findings and analysis renders its ultimate conclusion a nullity.

Second, despite these obvious limitations to the review, TES/SWEC discovered discrepancies in 20-40% of the items observed. (Hubbard Affidavit, at 5-7 (June 15, 1983).) Although both PGandE and the NRC Staff have attempted to dismiss these discrepancies as largely insignificant, such an interpretation misses the basic premise of quality assurance -- namely, that a QA program is established to catch both significant and less significant nonconformances. If, as here, a program fails to discover and correct a substantial percentage of the items observed -- regardless of their assumed significance -- there can be no reasonable assurance that the requirements of Appendix B have been met. In addition to the testimony of Richard Hubbard, Bechtel QA Manager Amaral agreed that one should be concerned about all errors that are left behind, "that you need to look at any error, and you need to correct any error, or make a disposition of that error, no matter what it is, and you've got to try to preclude that error from happening in the future." (Tr. 426-27.) Similarly, former PGandE QA Manager Raymond conceded on cross-examination that purely procedural

requirements (such as proper documentation) and actual rework of the hardware are "equally essential." (Tr. 510.) Thus, the claim that QA/QC discrepancies of the sort found by TES/SWEC can be dismissed as "insignificant" is inconsistent with the testimony of PGandE's own witnesses.

Third, the type of review conducted by TES/SWEC virtually ensured that the discrepancies found would be of a documentation and cosmetic variety, because the review consisted primarily of documentation review and visual inspection.

(Morrill, Tr. 879.) NRC witness Morrill conceded that TES/SWEC repeated no radiographs to determine accuracy, did no material tests, and redid no pre-op tests to confirm their validity.

(Tr. 879-80.) In short, the IDVP review revealed largely paper errors because it was itself largely a paper review.

Fourth, no attempt was made by the IDVP to utilize accepted statistical methods to determine the validity of its findings. (Cooper, Tr. 718.) Rather than conducting an "across the board" review of contractors from various disciplines, the IDVP chose to do a review of only two and, from there, to extrapolate its findings to other, unrelated contractors. The record is devoid, however, of any basis upon which to ground such an extrapolation, and even SWEC's Lundin conceded that insufficient information was generated by the review to estimate a statistically valid probability of undetected errors.

(Tr. 859.) Significantly, none of the parties seeking to justify the IDVP's decision to ignore statistical methods

methods offered testimony by an expert in statistics.

Finally, the IDVP apparently failed to determine the root cause of the discrepancies found. For example, with respect to 227 weld deficiencies described in ITR 38, at G-1-16, Lundin was unable to offer any explanation of why they occurred. (Tr. 764.) Without such an understanding, it is impossible to conclude with reasonable certainty that similar errors stemming from the same unknown cause do not exist elsewhere at Diablo Canyon. By treating the discrepancies as isolated aberrations, the IDVP may simply be ignoring the more fundamental underlying causes.

This evidence, together with that previously filed with the Board, indicates the serious shortcomings in the IDVP's CQA review. Far from conducting what the IDVP panel sought to characterize as a review that "look[ed] at everything that could possibly be looked at," (Lundin, Tr. 681), they have so limited its scope that it can provide little, if any, support for the ultimate conclusions of the IDVP. At the least, in light of the record developed, it cannot supply the reasonable assurance required for licensing.

III. THE EVIDENCE SUBMITTED IN SUPPORT OF THE MOTIONS TO REOPEN SATISFIES THE STANDARD FOR REVIEW OF SUCH MOTIONS.

In their May 10, 1983 Motion to Reopen the Proceeding on the Issue of Construction Quality Assurance, the Joint Intervenors described and addressed the three-part test

applicable to such a motion as prescribed in the Wolf Creek and Vermont Yankee decisions cited therein. Based on the documentary evidence submitted in support of the motion and on the evidence adduced at the hearing, the Joint Intervenors have clearly satisfied their burden of proof under those decisions.

To the extent, however, that there may be a dispute as to the authority of the Board to resolve factual issues at this stage of the proceeding, some further brief comment is necessary. Based upon the long-established principle stated by the Appeal Board in Vermont Yankee Nuclear Power Corporation (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523-25 (1973), the Joint Intervenors submit that any resolution by this Board of disputed issues of material fact is improper and inconsistent with established precedent. In Vermont Yankee, the Board stated that a hearing need not be held "unless there is a triable issue of fact," id. at 523, and it explained the applicable standard as follows:

In order words, to justify the granting of a motion to reopen the moving papers must be strong enough, in the light of any opposing filings, to avoid summary disposition. thus, even though a matter is timely raised and involves significant safety considerations, no reopening of the evidentiary hearing will be required if the affidavits submitted in response to the motion demonstrate that there is no genuine unresolved issue of fact, i.e., if the undisputed facts establish that the apparently significant safety issue does not exist, has been resolved, or for some other reason will have no effect upon the outcome of the licensing proceeding.

Id. (emphasis added; footnote omitted). Similarly, in ALAB-126,

at 396, the Appeal Board held that:

If upon examination of those documents and other quality assurance submissions or arguments of the parties, the Board is convinced that a legitimate issue remains, it will have to reopen the record on that issue.^{5/}

^{5/} In other words, the Board can utilize, at this stage, a procedure similar to the summary disposition procedure usually employed prior to a hearing.

Thus, in considering whether the three-part reopening test has been satisfied with respect to the instant motion, the standard to be applied by this Board is essentially that applicable to a summary disposition motion: whether there is a triable issue of fact to be resolved; if so, the record should be reopened for hearing.^{12/}

The Joint Intervenors respectfully submit that they have presented to the Board sufficient evidence to satisfy the reopening test and that triable issues of fact remain that can only be resolved through the established discovery and hearing process. Under the foregoing decisions, therefore, their motion to reopen should be granted.

^{12/} Were this Board to resolve factual matters based solely on the brief hearing on the motion, it would in effect be treating that "mini-hearing" as the ultimate reopened hearing. Not only is that contrary to the Board's intent, it would in effect deprive the Joint Intervenors of any right to discovery and, as a result, of their right to prepare adequately for the hearing. That these rights are especially crucial is evident from such matters, for example, as PGandE's repeated cross-examination of Mr. Hubbard regarding the extent of his familiarity with certain written procedures and manuals unavailable to him; the undocumented claim of the IDVP to have done a comparison to Appendix B of the reviewed QA programs; the undocumented claim of PGandE to have conducted audits demonstrating that the 79-14 discrepancies were not CQA-related;

[Footnote 13 continued]

IV. CONCLUSION

For the reasons stated herein and in each of the previous filings in support of and including the pending motions to reopen, the Joint Intervenors submit that their May 10, 1983 Motion to Reopen the Proceeding on the Issue of Construction Quality Assurance should be granted.

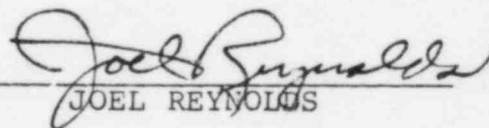
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Respectfully submitted,

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[Footnote 13]

the undocumented suggestion on cross-examination of Mr. Tennyson that pay records exist establishing shorter work hours than those claimed by him; the suggestion on cross-examination of Mr. Tennyson that the red tags removed by Mr. Carter had been adequately resolved; the uncompleted PGandE review of the annulus welding; and the on-going NRC review of the certain key CQA issues, including the adequacy of the Foley program and the resolution of the Superstrut issue.

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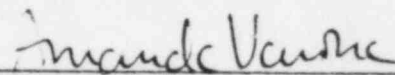
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