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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

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

Docket Nos. 50-275
50-323

Reopened Hearing - Design Quality Assurance

RESPONSE OF PACIFIC GAS AND ELECTRIC COMPANY
TO JOINT INTERVENORS' AND GOVERNOR DEUKMEJIAN'S
PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

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I

INTRODUCTION

After hearings concerning design quality assurance at Diablo Canyon Nuclear Power Plant ("DCNPP") were held from October 31, 1983, through November 21, 1983, Pacific Gas and Electric Company ("PGandE") filed its Proposed Findings of Fact and Conclusions of Law on December 9, 1983. On December 23, 1983, Joint Intervenor ("JI") and Governor Deukmejian ("Governor") filed their Proposed Findings of Fact and Conclusions of Law. ^{1/} Pursuant to this Board's order (Tr. D-3245), PGandE is hereby filing its response to those filings. In keeping with the preceding filings in these reopened proceedings, this response shall deal with the contentions seriatim and will deal jointly with proposed findings of the JI and Governor. ^{2/}

^{1/} The JI filing is somehow dated "January 23, 1982", an obvious error but a possible explanation for their counsel once again sending the pleading to the undersigned at an address which has not been occupied for nine months.

^{2/} Referred to collectively herein as "intervenors."

1 Historically in these proceedings the JI have resorted to proposed
2 findings which do not exist in the record, are misstatements of the record,
3 are statements from the record which are cited out of context, or are
4 argumentative statements presented with citation to the record which has
5 little or nothing to do with the argument presented. Their latest filing, as
6 shown infra, continues this tradition. While the filing of Governor's counsel
7 does not suffer from all of the same defects to the same extent, it too
8 contains misstatements of the record. Perhaps more important, however, the
9 proposed findings of both the JI and Governor singularly ignore all evidence,
10 even their own witnesses' testimony, which goes against the grain of their
11 case. It is respectfully submitted that the decision of this Board must be
12 based on the preponderance of all credible evidence adduced at hearing, not
13 just the evidence which arguably supports only one side of an issue.

14 As set forth in 10 CFR 2.754(b), the failure of a party to file
15 proposed findings of fact when directed to do so may be deemed a default.
16 This Board so directed the parties at the conclusion of these proceedings.
17 [Tr. D-3239.] A thorough review of the intervenors' proposed findings shows
18 that both of these parties failed to file proposed findings on seventeen (17)
19 of the thirty-nine (39) contentions at issue at the start of hearings. 3/
20 In addition, the Governor failed to file proposed findings on three (3)
21 additional contentions 4/ and JI on four (4). 5/ In summary, the Governor

22
23 3/ 2(d), 3(f)(i), 3(f)(iv), 3(p), 3(s), 3(t), 4(a), 4(b), 4(h), 4(i)(2),
24 4(j)(1), 4(j)(2), 4(k), 4(q), 4(r), 4(s), and 4(u).

25 4/ 4(i)(1), 4(t), and 9.

26 5/ 1(d), 1(e), 3f(i), and 3(o).

1 is now pursuing nineteen (19) contentions 6/ and JI eighteen (18). 7/
2

3 Contentions 1 and 2

4 The basic premise which seems to permeate both the JI's and
5 Governor's proposed findings is that DCNPP cannot be licensed so long as there
6 remains the possibility that a single deviation from "licensing criteria"
7 might exist. Neither JI nor the Governor acknowledge any distinction in
8 significance of deviations from licensing criteria. At the beginning of the
9 Governor's proposed findings, it is properly pointed out that "in order to
10 qualify for a license, an applicant must demonstrate that it has constructed
11 the plant in conformity with the construction permit and the application as
12 amended, the provisions of the [Atomic Energy] Act, and the rules and
13 regulations of the Commission..." [Governor findings, 1.]

14 After properly stating what the PGandE must show, however, Governor's
15 counsel begins a sometimes subtle but neverending assault on common sense and
16 logic. The intervenors' idea of compliance with the above-referenced
17 requirement is one of form over substance. They seek to equate the idea of
18 conforming to rules and regulations of the Commission to that of rigid
19 adherence and strict compliance with "licensing criteria." The problem with

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21 //

22 //

23
24 6/ 1(a), 1(b), 1(c), 1(d), 1(e), 2(a), 2(b), 2(c), 3(f)(i), 3(f)(ii),
25 3(f)(v), 3(o), 3(q), 3(r), 4(l), 5, 6, 7, and 8.

26 7/ 1(a), 1(b), 1(c), 2(a), 2(b), 2(c), 3(f)(iii), 3(f)(v), 3(q), 3(r),
4(i)(1), 4(l), 4(t), 5, 6, 7, 8, and 9.

1 this equation is that intervenors never attempt to even singularly define
2 "licensing criteria," let alone examine it in its multiple meanings. The term
3 licensing criteria clearly can be, and is, used with different meanings at
4 different times by different people. The term encompasses everything from
5 "basic" criteria set by the NRC (e.g., there shall be a containment, ECCS,
6 etc.) to extremely minor specifications or descriptions of design details set
7 by the applicant or designers themselves. The term "deviation from licensing
8 criteria" can obviously mean anything from fundamental design errors having
9 substantive safety significance to minor technical variations from design
10 detail which have no safety consequence whatsoever. The intervenors make no
11 such distinction and in fact treat each and every deviation from licensing
12 criteria as if it, either alone or in combination with some other random or
13 unknown deviation, will culminate in disaster. The evidence is clear that, to
14 be meaningful, deviations or errors must be viewed in light of their
15 significance. [e.g., Anderson, Tr. D-1385; Knight, Tr. D-2656.] To refuse to
16 make such distinctions, as do counsel for intervenors, is to obscure a central
17 issue of this proceeding. The real issue of proper design is one of
18 conformance to substantive safety criteria and the resultant protection of
19 public health and safety. It is not one of mere formalities and
20 technicalities. Obviously substantive safety criteria must be satisfied 100%
21 of the time. That all other criteria can never be met 100% of the time under
22 any circumstance was testified to by many witnesses including the Governor's
23 own, Dr. Apostolakis and Mr. Hubbard. [Apostolakis, Tr. D-2371-72; Hubbard,
24 Tr. D-2130. See also: Reedy, Tr. D-1785; Moore, Tr. D-381-3; Cloud,
25 Tr. D-1545; Cooper, Tr. D-1543; Knight, Tr. D-2692-3.] To follow intervenors'
26 arguments to their logical conclusion would prevent licensing of all

1 facilities in that one could never be 100% certain that there were no
2 deviations from each and every licensing criteria.

3 As a basic premise, the intervenors have maintained that the
4 verification program must provide the same level of assurance as an approved
5 QA program and that such level can only be obtained by a 100% review.
6 [Governor findings, 10, 19, 35, 54, 102, 108; JI findings, 13-17.] That
7 position assumes that no credit may be assigned for an existing QA/QC
8 program. Such is not the case, as has been acknowledged by this Board:

9
10 "These verification activities, if properly conceived and
11 carried out, are to substitute for and supplement, the
12 applicant's design quality assurance program in order to
13 demonstrate that the Diablo Canyon plant is correctly
designed." ALAB Order, August 16, 1983, p. 5 (emphasis
added).

14 Significantly, neither the Commission Order nor the Staff letter required that
15 a 100% review be conducted for reinstatement of the license, but merely that
16 there be included in the program provision for "a suitable number and type of
17 sample calculations ..." to verify the design process. [PGandE Ex. 86,
18 Attachment 1, para 5; PGandE Ex. 87, Enclosure A, para 5.] Consequently, it
19 cannot be maintained that a 100% verification is somehow legally required to
20 demonstrate the plant is correctly designed.

21 The Governor at page 9 has stated that "design control procedures
22 properly will include a 100% review of all design work by a second designer or
23 engineer plus approval of all work by a supervisor." Such was the case at
24 DCNPP. [Moore, Tr. D-401-02.] Where there has been such a review of design,
25 the subsequent discovery of design errors does not invalidate that 100%
26 review. The Governor's witness, Mr. Hubbard, testified that his QA program at

1 General Electric, subsequent to manufacture, found hundreds of design errors
2 each day (Hubbard, Tr. D-2112), but nevertheless, that QA program was a
3 properly functioning program. [Hubbard, Tr. D-2130.] The Governor's own
4 witness testified that LERs from all plants contain numerous design errors
5 which have escaped QA program scrutiny. [Apostolakis, Tr. D-2376.] PGandE
6 would submit that this Board can find that under a properly functioning QA
7 program, a 100% review of design may exist even though design errors are
8 subsequently uncovered after the design process is complete.

9 The Governor's proposed finding 19 argues that the IDVP verification
10 of seismic design does not constitute an adequate substitute for an adequate
11 QA program. Such a premise is contrary to the evidence. The record shows
12 that verification of seismic design was essentially a 100% verification.
13 [Anderson et al., ff. Tr. D-224, at 6; PGandE Ex. 90, p. 1.5-2.]
14 Additionally, the verification was performed under a fully functioning QA
15 program and was further verified by IDVP review. [Cooper et al., ff. Tr.
16 D-1459, at 1/2-13.]

17 The intervenors have proposed findings to the effect that the IDVP
18 did not properly implement the requirements of the Commission in that it did
19 not review the design work of all service-related contractors. [Governor
20 findings, 21-27; JI findings, 7-11.] The IDVP, however, did conduct its
21 review according to the program which was approved by the Commission. [Knight
22 et al., ff. Tr. D-2649, at 10-11.] The proposal of the IDVP to exclude
23 certain contractors whose work did not have an influence on final design was
24 evident in each program management plan which was submitted to the
25 Commission. [PGandE Ex. 88, Sec. 5.2.1, p. 7; PGandE Ex. 89, Sec. 3.2.1,
26 App. D, p. 13; Sec. 5.8.2, p. 40; PGandE Ex. 97, pp. 1, 5.] The fact that the

1 IDVP had not included all service-related contractors was raised to the
2 Commission by Region V, ^{8/} when it specifically suggested that "it may be
3 appropriate to reexamine the scope of the initial verification sample defined
4 in Phase II of the Program Plan." [PGandE Ex. 157, Encl. 6, pp. 4, 5.]

5 With such knowledge of the proposed design of the program by the
6 IDVP, the Commission approved the verification program as proposed (PGandE Ex.
7 159) with the proviso, "except that figure 3 of SECY-82-414 is replaced by
8 figure 1 of the December 3, 1982 letter from Pacific Gas and Electric Company
9 to D. Eisenhut." [Ibid.] Figure 3 is cited as authority by the Governor's
10 counsel for the "requirement that 'all' service-related contractors be
11 included." [Governor findings, 23.] The replacement of figure 3 removed any
12 ambiguity as to Commission approval since figure 1 does not contain language
13 that "all" contractors be included, a fact of which this Board may take
14 judicial notice. Consequently, it is evident that the Commission did not
15 intend for its Order (CLI-81-30) and the associated Staff Letter of November
16 19, 1981 to include "all" service-related contractors as argued by
17 intervenors. [PGandE Ex. 86, 87.]

18 The intervenors propose findings to the effect that the IDVP review
19 //

21 ^{8/} Significantly, Region V did not question the absence of Westinghouse from
22 the sample. However, the absence of Westinghouse from the program was
23 known and understood by the Governor and JI, and their position was
24 communicated to the Commission. [PGandE Ex. 157, Encl. 11, p. 11-2.]
25 This Board may take official notice of the September 24, 1982 memorandum
26 from the Executive Director of Operations to the Commission, referenced in
SECY-82-414, which informed the Commission that one of the comments of the
Governor and JI was that "a sample of safety features design by
Westinghouse (NSSS vendor for DCNPP) should be included in the program."
[Official Memorandum of Executive Director for Operations to the
Commission, dated September 24, 1982, Attachment 8, item 8.]

1 of non-seismic design is inadequate in that the sampling program did not
2 employ a random sample and that inferentially a 30% sample of all non-seismic
3 design work is insufficient. [Governor findings, 28-35; JI findings, 13.]
4 The uselessness of the results of random sampling in this design verification
5 proceeding has been testified to by the Governor's own witness. [Apostolakis,
6 Tr. D-2354.] The purposeful selection of the 30% sample and the methodology
7 of review provides reasonable assurance at least equal to an approved quality
8 assurance program. The systems that intentionally were selected were complex,
9 diverse, and had the maximum number of interfaces within and between design
10 groups in PGandE and its service-related contractors. [Anderson et al., ff.
11 Tr. D-224, at 10; Cooper et al., ff. Tr. D-1459, at 1/2-22-24.] While the
12 IDVP disclaimed the ability to determine a priori where one was most likely to
13 discover design errors (Cloud, Tr. D-1547; Cooper, Tr. D-1549), the IDVP did
14 testify that, through experience, one can select potential error regions.
15 [Cooper, Tr. D-1547.]

16 By employing a methodology of searching out generic concerns, the
17 IDVP was able to determine with a high degree of certainty that generic
18 concerns do not exist at DCNPP, that there is very little likelihood that
19 significant errors remain at DCNPP, and that there was not a breakdown in the
20 engineering process. [Cloud, Tr. D-1764; Cooper, Tr. D-1765, D-1767;
21 Krechting, Tr. D-1774.] Additionally, any remaining non-generic or random
22 error would not lessen the defense in-depth design of the plant. [Krechtig,
23 Tr. D-1773-74.]

24 The intervenors have also proposed findings asserting as unfounded
25 the claim that there remain no undetected errors having safety significance.
26 This position presumes that "safety significance" can only be shown by a

1 Probabilistic Risk Assessment (PRA). [Governor findings, 36-46; JI findings,
2 32-33; Apostolakis, ff. Tr. D-2313, at 10-11.] In a PRA, one postulates the
3 possible occurrence of a failure, assesses the probability of such occurrence,
4 and assesses the extent of the consequences of the failure. [Kaplan,
5 Tr. D-1404; Cooper, Tr. D-1557.] With a PRA one determines "safety
6 significance" by quantifying risk. [Kaplan, Tr. D-1396.]

7 However, unless one first postulates a failure as a precondition to
8 such a quantification, an engineering judgement must be made of safety
9 significance in order to determine whether a particular error will result in a
10 failure. [Cooper, Tr. D-1557.] Having satisfied themselves that no generic
11 concerns remain (Cloud, Tr. D-1764), and having found no errors that
12 constituted a substantial safety hazard (Knight, Tr. D-2696-97, D-2819), the
13 IDVP properly made the determination that the deviations from criteria that
14 remain would not constitute a substantial safety hazard. [Cloud, Tr. D-1545;
15 Cooper, Tr. D-1558-59, D-1561-62.] It is respectfully submitted that for
16 purposes of design verification, the meaning of the term "safety significance"
17 is not that of quantifying risk but rather that of exercising engineering
18 judgement regarding the quality of design.

19 Contrary to the assertion of the intervenors (Governor findings,
20 54-65; JI findings, 22-27, 36-37), it was not a requirement of the Commission
21 that the IDVP retain a statistician, but only that the program include
22 "consideration of statistics in the sampling plan." [PGandE Ex. 158.]
23 Subsequent to that Order, the IDVP did submit its proposed management plans,
24 and the Staff, in its statement of "Findings and Resolution of Comments," in
25 SECY-82-414, specifically stated that "Rigorous statistical techniques are
26 largely inappropriate for a design verification program." [PGandE Ex. 157,

1 Encl. 11, p. 11-3.] The comments for which the Staff resolution was provided
2 included those of the Governor and JI to the effect that, "The statistical
3 basis for the sample selection should be included." [PGandE Ex. 157,
4 Encl. 11, p. 11-2, Citing Attachment 8 of Memorandum from the Executive
5 Director for Operations to the Commission, dated September 24, 1982, a
6 Commission document of which the Board may take judicial notice.] With such
7 knowledge, the Commission "unanimously approved the Staff recommendations on
8 Phase II of the DCP design verification program, as contained by
9 SECY-82-414." [PGandE Ex. 159.]

10 Contrary to the assertion of the intervenors, the commitment made by
11 the IDVP in its program plan, was only that the IDVP would "arrange for an
12 evaluation of the entire Phase II program by an expert in the applicability of
13 statistics to engineered systems." (Emphasis added.) [PGandE Ex. 88, 89,
14 App. C.] If there were a technical violation of such commitment, which PGandE
15 does not concede, the issue of the applicability of statistics has been fully
16 aired before the Board in this proceeding and the results of that examination
17 are enlightening.

18 First, there is no evidence in statistical literature of the previous
19 use of statistical sampling techniques for a design verification program such
20 as the IDVP. [Samaniego, Tr. D-2408-09, D-2452.] Second, both the Governor's
21 own witness, Dr. Apostolakis, and the Staff testified that, for any nuclear
22 power plant, there is no standard of acceptability for an error rate.
23 [Apostolakis, Tr. D-2369; Knight, Tr. D-2715.] The product of statistical
24 analysis is not useable for informed decision making here. [Apostolakis,
25 Tr. D-2354.] Instead, the issue before the Board is not what could have been
26 done, assuming statistical techniques could have been used at all, but whether

1 what was done gives reasonable assurance that the plant as designed can
2 operate without undue risk to public health and safety.

3 The Governor has proposed a set of findings based upon the
4 proposition that the ITP, by itself, did not substitute for an approved QA
5 program. [Governor findings, 85-108.] PGandE believes the record clearly
6 reflects the contrary. However, it should be pointed out that the Commission
7 suspended PGandE's license, "pending satisfactory completion of the actions
8 specified in Attachment 1 to this Order." (Emphasis added.) [PGandE Ex.
9 86.] There was no requirement for such a program as the ITP in the attachment
10 to the Commission's Order or the Staff Letter. [PGandE Ex. 86, 87.] The work
11 accomplished by the ITP was over and above that required by the Commission and
12 constitutes additional grounds for reasonable assurance.

13 Contrary to the assertion of the Governor (Governor findings, 97), it
14 was known, or should have been known, by all parties long before the hearing
15 that the ITP was performing a verification function. As was acknowledged by
16 the Governor in his proposed findings, the IDVP Final Report, published in
17 June 1983, specifically noted that the DCP responded to "specific non-seismic
18 concerns identified by the IDVP and to the results of internal DCP
19 activities." (Emphasis added.) [PGandE Ex. 90, Rev. 0, p. 1.4-3.] Counsel
20 for the Governor conducted examination regarding the ITP review during
21 discovery. [Anderson, Tr. D-1426-27, D-1429-32.] Further, the results of the
22 ITP review were reported semi-monthly to all parties and to the Staff of the
23 Commission, pursuant to paragraph 4 of attachment 1 of the Commission's
24 Order. The Order required PGandE to report "on all of the ongoing reanalysis
25 efforts and design verification programs being conducted by and for PGandE,
26 including but not limited to the program referred to in paragraph 1."

1 [PGandE Ex. 86, Attachment 1, p. 6; Anderson et al., fr. Tr. D-224, at 7.]

2 While the ITP review was not the same depth as that of the IDVP, it
3 did review the important details for system functionality. [Anderson,
4 Tr. D-1427, D-1429.] The program also made findings and determinations which
5 resulted in a major change to the extent of the seismic analysis at DCNPP.
6 [PGandE Ex. 90, p. 1.5-2.] Significantly, none of the deficiencies discovered
7 by the ITP were considered to constitute a substantial safety hazard, a
8 conclusion with which the Staff also reached. [Anderson, Tr. D-345-46;
9 Knight, Tr. D-2696-97, D-2827-28.]

10 It is respectfully submitted that the ITP reverification, as was the
11 case for the IDVP review, provides reasonable assurance that the plant as
12 designed can operate without undue risk to the public health and safety at
13 least equal to the "adequate confidence" afforded by compliance with 10 CFR
14 Part 50, Appendix B.

15
16 Contention 3(f)(i) 9/

17 In Section III-A of his proposed findings, the Governor discusses the
18 methods used to model soil structure interaction for containment which appears
19 related to Contention 3(f)(i). The findings correctly state how the motion
20 input was applied and then state that the procedure used was, "...inconsistent
21 with current soil structure interaction modeling". [Governor findings, 110.]
22 However, the citations to the transcript do not support the claim that what
23 was done is inconsistent with present practice. Indeed, Tr. pp. D-2294-98
24

25 9/ For some reason the intervenors' proposed findings do not respond to
26 Contention 3 in the form in which it was accepted for litigation and
litigated.

1 have nothing whatsoever to do with soil structure interaction. At page D-657
2 of the transcript, PGandE witness Dr. White does say that what was done is
3 "somewhat different" from what is used today ^{10/}, but he goes on to say that
4 the data derived in the original study was acceptable and that use of today's
5 techniques would not produce a much different final result. [White,
6 Tr. D-657.] Dr. Seed concurred in this judgment. [Seed, Tr. D-657.]

7 As to the use of a correction factor, Dr. Seed did testify that the
8 use of such a factor is not a common practice today, but that he thought it
9 was appropriate considering the level of technology available at the time the
10 study was performed. [Seed, Tr. D-660.] The Governor's proposed findings
11 correctly cite the Staff's concurrence that the results of the study are
12 acceptable. [Governor findings, 112; Costantino, Tr. D-2639.]

13
14 Contention 3(f)(iii)

15 Section III-C of the Governor's proposed findings and Section III-A
16 of the JI proposed findings address Contention 3(f)(iii), which deals with the
17 phenomenon of uplifting of the containment base mat. The intervenors ignore
18 the persuasive testimony of PGandE and IDVP witnesses that there is no
19 certainty that uplift would occur, and that if it did, the net effect would be
20 negligible and may be less severe than the environment without uplift.

21 [White, Tr. D-669; Seed, Tr. D-686, 692-94; Holley, Tr. D-1874-81; Biggs,
22 Tr. D-1881-86; Cloud, Tr. D-1886-94; PGandE findings, 115.] PGandE witness
23 //

24
25 ^{10/} He earlier explained that the original soil structure interaction was a
26 then state-of-the-art effort as performed in 1969-1970. [White,
Tr. D-654.]

1 White pointed out that there is no regulatory requirement that the phenomenon
2 of uplift be considered in analyzing the plant design so no licensing criteria
3 are being deviated from by not analyzing uplift. [White, Tr. D-681.] He also
4 testified that no study has been done of possible increased vertical
5 accelerations from uplift because he believed the results would show the
6 effect is not important. [White, Tr. D-682.] He further testified that for
7 the Hosgri analysis the NRC required that there be a rigid base assumption
8 under which uplifting would not occur. [White, Tr. D-696.] Finally, he
9 testified that of all the earthquakes that have been studied, no damage to any
10 structure or its contents has ever been attributed to uplift. [White,
11 Tr. D-669.] Dr. Seed made the same observation. [Seed, Tr. D-683-84.] A
12 study of the effect of uplift on the foundation mat at DCNPP was performed,
13 however, and it was determined that the foundation and walls could accommodate
14 the increase in pressure from uplift. [White, Tr. D-673, 680.] Governor's
15 witness Roeset testified that the net increase in the peak vertical
16 acceleration from the effects of uplift could be 10 %. [Roeset,
17 Tr. D-2216.] Dr. Cloud pointed out that any increase in vertical
18 accelerations would reduce the horizontal accelerations and that the equipment
19 inside containment was qualified with a margin to allowable stresses which
20 would easily permit acceptance of this increase. [Cloud, Tr. D-1886, 2036.]
21 The Staff witnesses agreed that the change in vertical response due to uplift
22 would be small (Miller, Tr. D-2510-11) and that margins of 10 to 15 % or more
23 exist in all directions. [Knight, Tr. D-2512-13.]

24
25 Contention 3(f)(v)

26 Sections III-B of the Governor's and JI's proposed findings appear to

1 deal with Contention 3(f)(v)--modeling of the soil springs for the auxiliary
2 building. As noted in PGandE's proposed findings, the Governor's witness'
3 concerns on this Contention have been satisfied. [PGandE findings, 30, fn.
4 4.] No evidence exists that there is anything improper as respects modeling
5 of the soil springs. Thus, all of the Governor's and JI's proposed findings
6 on this subject would appear to be moot.

7 Both the Governor and JI incorrectly interpret figure 15 of ITR-68 in
8 an attempt to establish a shear wave velocity of 1500 fps for the rock under
9 the auxiliary building at elevation 100. [PGandE Ex. 155.] Dr. Seed found a
10 value of 2100 fps "somewhat low", and Dr. Roesset found the value of 1500 fps
11 "way, way too low in comparison with the others." [Seed, Tr. D-800; Roesset,
12 Tr. D-2227.] Dr. Roesset then speculated on the size of the increase in
13 response spectra for the auxiliary building which could follow using a shear
14 wave velocity of 1500 fps. [Roesset, Tr. D-2227.] However, the data in
15 figure 15 of ITR-68 from which the 1500 fps figure was derived applied to the
16 diesel fuel oil tanks and not the auxiliary building. In addition, these data
17 are based upon seismic refraction tests rather than upon the more reliable
18 uphole and crosshole tests which were used for the auxiliary building.
19 [Cloud, Tr. D-1998-99, D-3112, D-3122-23; White, Tr. D-3136.] Dr. Roesset
20 agrees that the crosshole tests are more reliable. [Roesset, Tr. D-2269.]
21 Seismic refraction tests can be expected to give lower values than downhole or
22 crosshole tests. [Cloud, Tr. D-3123.] Dr. Cloud also testified that, as part
23 of the IDVP, all the soils and rock data were thoroughly checked and found to
24 be all correct. [Cloud, Tr. D-3124-25.] In any event, a shear wave velocity
25 of 1500 fps for the rock under the auxiliary building is too low and the shear
26 wave velocities used should be those advanced by PGandE, the IDVP, and the

1 Staff. 11/

2 The IDVP reviewed the DCP modeling of the soil springs for the
3 auxiliary building and the rock properties on which it is based and confirmed
4 that what was done was appropriate. [Cloud et al., ff. Tr. D-1843, at 3-8;
5 PGandE Ex. 155.] The DCP and IDVP made parametric studies of the auxiliary
6 building using a range of soil spring constants, and the variable inputs did
7 not seem to make much difference structurally. [Biggs, Tr. D-1898; PGandE Ex.
8 145; White, Tr. D-706; Cloud, Tr. D-1899, D-1904-05.] These studies
9 established soil spring parameters that caused the most severe loading
10 conditions on the floors and shear walls of the auxiliary building, and it was
11 found that the structure would be capable of withstanding these worst case
12 loads. [White, Tr. D-713-19; Wray, Tr. D-1908-09; PGandE Ex. 145,
13 Table 5.] 12/

14 Addressing Governor's proposed findings 120 to 124, rocking is not an
15 important phenomenon for a building with a "squatty" configuration, such as
16 the auxiliary building. [White, Tr. D-731-32; Cloud, Tr. D-1914.] The

17
18 11/ In JI proposed finding 41, the statement is made that the difference
19 between the shear wave velocity found by the IDVP and a reasonable lower
20 bound was significant and not justifiable with a citation to Staff witness
21 Costantino. The citation should have been to Staff witness Miller, and
22 all he said was that a 20% change in response spectra which was found for
23 the softer springs in the 2000 fps range "is beginning to become a
24 significant effect." [Miller, Tr. D-2521.] However, JI omit the IDVP
25 conclusion that a 20% increase is acceptable because the lower bound is
26 conservative. [ITR-55, PGandE Ex. 145, p. 25.] PGandE witness Dr. White
did not find the 20% increase to be significant. [White, Tr. D-712.] Nor
did IDVP witness Cloud. [Cloud, Tr. D-1905.]

12/ In his proposed finding 119, the Governor references Dr. Roesset's
reaction of surprise to certain of the data appearing in Table 5 of
ITR-55. Staff witness Miller testified the data did not surprise him.
[Miller, Tr. D-2468.]

1 inapplicability of the shear wave velocity figure of 1500 fps to the auxiliary
2 building has already been discussed. Finally, a fixed base analysis of the
3 soil structure interaction for elevation 100 is not appropriate because the
4 shear wave velocity of the material at elevation 100 is about 2700 fps,
5 indicating that the material is softer than at elevation 85. [White,
6 Tr. D-700-01, D-730.] Further, Table 5 of ITR 55 (PGandE Ex. 145) indicates
7 that a fixed support at elevation 100 is not a worst case.
8

9 Contention 3(o)

10 With regard to Contention 3(o), and Governor's proposed finding 130,
11 the Staff has stated that information it received orally is adequate, subject
12 to written confirmation. [Miller, Tr. D-2528-29.] This information was
13 confirmed by PGandE in writing on November 17, 1983, copies of which were
14 served on all parties.
15

16 Contention 3(q)

17 Section III-E of the Governor's proposed findings and JI proposed
18 findings 43 and 44 concern the properties of the soils and rock around the
19 buried diesel fuel oil tanks and deal with Contention 3(q). The IDVP
20 conducted a quality assurance review of Harding-Lawson Associates (HLA) and,
21 after finding that HLA had not implemented a QA program for the Unit 1 soils
22 work, developed an extensive program to verify the HLA soils work. [PGandE
23 Ex. 155, p. 2; Cloud, Tr. D-2012.] The IDVP also reviewed the DCP corrective
24 action program for the tanks and found it to be acceptable. In addition, the
25 IDVP found the diesel fuel oil tanks to meet licensing criteria. [ITR-68
26 (PGandE Ex. 155), p. 41; Cloud et al., ff. Tr. D-1843, at 3-23, 24.] Dr.

1 Seed, an acknowledged soils expert, testified he has known of HLA for a long
2 time and was of the opinion they do good quality work. [Seed, Tr. D-766.]
3 Also, based upon his extensive experience, he believes the results they
4 achieved are reasonable and within the bounds to be expected. [Seed,
5 Tr. D-770-73, D-780; Gov. Ex. 41.] The IDVP also thought that HLA had done
6 reasonable work, and they conducted an extensive program to verify the HLA
7 work. [Cloud, Tr. D-2024-25.] Thus, there is no need to redo the HLA work as
8 requested by the Governor.

9 The information about the backfill around the diesel fuel oil tanks
10 is not contradictory. An IDVP witness testified that an in depth study was
11 performed of the soils testing in the vicinity of the diesel fuel tanks.
12 [Cloud, Tr. D-1943, D-1997.] In addition, the IDVP performed independent
13 analyses of the diesel tanks for a range of soil properties. In particular,
14 the IDVP analyzed the tanks using the modulus curves of Figure 14 of ITR-68
15 that are represented by expressions containing exponents of 0.18 and 0.7. The
16 former was also used by HLA in its original analysis. The latter value was
17 posited by the IDVP as a conservative upper bound. [Seed, Tr. D-775-80;
18 Cloud, Tr. D-1982-83.] In other words, the IDVP qualified the diesel tanks
19 using the entire possible range of properties and concluded they met licensing
20 criteria. [PGandE Ex. 155, p. 41; Cloud et al., ff. Tr. D-1943, at 3-23,
21 3-24.] Thus Dr. Roesset's complaint that the two curves indicate uncertainty
22 in the data is meaningless. [Roesset, ff. Tr. D-2206, at 18.]

23 In proposed findings 133 through 138, the Governor attempts to
24 establish that the information PGandE and the IDVP have given about the rock
25 around the diesel fuel oil tanks contradicts the data used to qualify the
26 //

1 auxiliary building. ^{13/} In reality, the two are consistent. [Cloud,
2 Tr. D-3123.] As explained above figure 15 of ITR-68 presents data for the
3 rock around the diesel fuel oil tanks. This data is based upon seismic
4 refraction tests, which tend to give lower values. Data for the auxiliary
5 building, based upon the more accurate crosshole tests, is shown on figure 3
6 of ITR-55. These holes were bored on the east side of the auxiliary building
7 more than 400 feet from the diesel tanks. [Cloud, Tr. D-1998, D-3112,
8 D-3122-23.] ^{14/}

9 The entire subject of the soils and rock properties around the diesel
10 fuel oil tanks (Governor findings, 131-138; JI findings, 43-44) arose because
11 Dr. Roesset was apparently unaware of the amount of work which had been done
12 on analyzing this soil. [Roesset, Tr. D-2251, D-2265.] However, on rebuttal
13 Dr. Seed explained at length the extensive amount of analysis which had been
14 done and the bases for the conclusions reached. [Seed, Tr. D-3114-19.]

15
16 Contention 3(r)

17 Section III-F of the Governor's proposed findings and JI proposed
18

19 ^{13/} In their proposed finding 44, JI indicate some confusion as to the
20 formulas used in ITR-68 to describe the rock properties. The formula in
21 line 5 of this paragraph is for compression wave velocity. [ITR-68
22 (PGandE Ex. 155), Figure 15.] The formula in line 9 is for shear wave
velocity. [ITR-68 (PGandE Ex. 155), Figure 25.] To be consistent, the
formulas have to be rearranged so that they are on the same basis.

23 ^{14/} In proposed finding 133, Governor's counsel indicate their confusion as to
24 the location of the diesel fuel oil tanks by citing figure 5 of ITR-68
25 (PGandE Ex. 155). However, the tanks shown on that figure are not the
26 diesel fuel oil tanks, which are located to the west of the turbine
building which, in turn, is west of the auxiliary building. [See Figure 1
for a description of those tanks and Figure 11 for the location of the
diesel tanks.]

1 findings 45 and 46 deal with the soil above the auxiliary saltwater (ASW)
2 piping and circulating water intake conduits (CWIC). ^{15/}

3 The data presented in the intervenors' proposed findings on
4 Contention 3(r) is irrelevant because, as explained by PGandE and IDVP
5 witnesses, the backfill over the ASW piping and CWIC has a negligible effect
6 on the response of the structures because the structures are embedded in or
7 constrained by the rock on three sides. Thus, the response of the structures
8 will not be significantly influenced by the nature of any soil used as
9 backfill, but rather by the constraining rock in which the structures are
10 embedded. [Seed, Tr. D-836-40, D-3114-15, D-3128.]

11 In any event, as set forth in PGandE's proposed findings 150 to 155,
12 fill from the ASW piping and CWIC locations was analyzed and the results
13 corresponded to the standard Seed-Idriss curve for sand, which was used in the
14 ITP analysis. [White et al., ff. Tr. D-651 at 86; Seed, Tr. D-3128.] Dr
15 Seed explained that, because the data obtained from laboratory tests fit
16 conservatively the Seed-Idriss curve for sands, no correction factor was
17 applied. [Seed, Tr. D-3131.] If a correction factor had been applied, the
18 results would have led to lower computed movements in the structures being
19 analyzed and thus to less conservative results. [Seed, Tr. D-3118,
20 D-3131-32.] The IDVP verified that the form of modulus vs. strain curve used
21 by the ITP was proper, and the Staff concurred that the approach used by the
22 ITP was proper. [Cloud et al., ff. Tr. D-1843, at 3-25; Costantino et al.,
23 ff. Tr. D-2463, at 24.]

24
25 ^{15/} Governor's proposed finding 139 essentially repeats Governor's proposed
26 finding 131.

1 Section III-G of the Governor's proposed findings concerns
2 independent modeling of the plant structures. As such, it deals with
3 Contention 1(d). The determinative response to these proposed findings is
4 contained in the testimony of the Governor's own witness, Dr. Roesset, who
5 testified that such independent studies, while they may be valuable, are not
6 necessary at this point in time and he would not recommend that they be
7 undertaken. [Roesset, Tr. D-2247, D-2293, D-2297.]

8
9 Contention 4(i)(1)

10 JI assert that there is not sufficient assurance of adequate fire
11 protection for the AFW pump room consistent with licensing commitments for
12 fire zone separation. [JI findings, 47-49.]

13 The uncontroverted testimony of PGandE, IDVP, and NRC Staff witnesses
14 clearly establishes the adequacy of fire separation for the motor-driven AFW
15 pump room. Once again, JI cite "facts" which are simply not in the record.
16 [JI findings, 47.] At no point in his testimony did the NRC witness state
17 that there was a "danger" for more rapid propagation of elevated temperatures
18 and combustion products due to a larger ventilation grate in the ceiling of
19 the AFW pump room. [Kubicki, Tr. D-2870-78.] Rather, he testified that there
20 was no greater likelihood of propagation of a fire from the pump room to the
21 adjoining rooms due to an increase in the size of the ventilation grating. He
22 based this conclusion on the fact that the size of the opening was not a
23 significant factor and would not impact the propagation of a fire. [Kubicki,
24 Tr. D-2871.] The IDVP also concluded that the key ingredients were the air
25 flow characteristics and the amount of combustible materials, not the
26 ventilation grate opening. [Krechting et al., ff. Tr. D-2040 at 4-16; PGandE

1 Ex. 110.] The NRC Staff supported this conclusion based on its own
2 independent fire protection review. [Kubicki, Tr. D-2875-76.] Hence, there
3 is reasonable assurance that Appendix R fire protection requirements have been
4 met in this instance.

5
6 Contention 4(1)

7 Both the JI and the Governor assert that PGandE has failed to utilize
8 the appropriate licensing criteria in performing its analysis for jet
9 impingement. [JI findings, 50-51; Governor findings, 154-158.] While the
10 language in various parts of the FSAR may indeed be ambiguous in
11 distinguishing pipe break and pipe crack effects requirements for inside and
12 outside containment, the FSAR clearly identifies in Tables 3.6-1 and 3.6-2
13 each and every line inside containment for which design basis breaks for jet
14 impingement analysis are postulated. [Connell, Tr. D-616; Knight, Tr. D-2895,
15 D-2897.] Since the FSAR constitutes the licensing basis for the plant, the
16 PGandE analysis utilizing the lines identified in Tables 3.6-1 and 3.6-2 for
17 conducting its jet impingement analysis is ipso facto correct. The three
18 remaining lines inside containment that the intervenors say have not been
19 analyzed have in fact been looked at even though they were not formally
20 included in the jet impingement analysis. [Connell, Tr. D-616-17.]

21
22 Contention 4(t)

23 Lacking any evidence whatsoever to support their original contention,
24 JI now argue that the testimony is insufficient to assure that the breakers
25 will perform as intended. [JI findings, 52-54.] JI completely ignore,
26 however, the testimony of PGandE's witnesses that the testing of these

1 breakers demonstrated their capability to interrupt at values up to 61,000
2 amps--a capability far in excess of the 39,000 amps interrupt
3 requirement. ^{16/} [Vahlstrom, Tr. D-532; Moore, Tr. D-524.] They also
4 ignore testimony that the manufacturer stated in writing (certainly an
5 "express guarantee") that the breakers in question will interrupt up to 45,000
6 amps. [Krechting, Tr. D-2055.]

7 8 Contention 5

9 Contention 5 alleges that the Diablo Canyon "as-built" configuration
10 does not conform to the design drawings and analyses. In support of this
11 contention, the Governor and JI identify six bases:

- 12 1. Recommendations from a February 12, 1982 INPO report and EDS
13 Nuclear report. [Governor findings, 163; JI findings, 55, 60.],
- 14 2. Results of BNL's independent analysis. [Governor findings, 162;
15 JI findings, 55.],
- 16 3. EOIs issued by the IDVP during its review of the ITP's
17 Corrective Action Program. [Governor findings, 165, 166; JI findings, 55-60.],
- 18 4. Inadequacy of the IDVP's review. [Governor findings, 167-171.],
- 19 5. Timely completion of the "as built" verification. [Governor
20 findings, 173, 174.], and
- 21 6. A statement from the draft Case Study C report. [JI findings,
22 61.]

23 Each of the Governor and JI arguments with respect to these items is
24 discussed below. In each case the Governor and JI ignore much of the record

25 _____
26 ^{16/} This testing consisted of five makes and breaks without failure.

1 and misstate other parts. The JI findings are essentially a verbatim
2 reproduction of Mr. Hubbard's prefiled testimony (Hubbard, ff. Tr. D-2084, at
3 13-18) with no rebuttal to PGandE proposed findings 238 to 246 or
4 acknowledgement of countervailing evidence.

5 The INPO report referenced by the Governor and JI resulted from a
6 review of plant operations conducted in late January 1982. [Gov. Ex. 11.]
7 The date for this review was shortly after the ITP and IDVP were initiated
8 and, considering the time frame, the INPO recommendation was clearly
9 consistent with the early findings of the IDVP with respect to more timely
10 reconciliation of as-built drawings. The EDS review was conducted in May
11 1982, but their recommendation was based upon review of a procedure dated May
12 12, 1981. [Gov. Ex. 36 at p. A 16111.] ^{17/} The scope of the EDS review was
13 not an audit, but a review to determine what each manual under the auspices of
14 quality assurance needed to be self-sufficient. [De Uriarte, Tr. D-3149.]
15 When the entire recommendation is read, including the first sentence which was
16 not quoted by JI (JI findings, 60), it clearly allows the Engineering Manual
17 to become self-sufficient, without consideration of procedures governing the
18 Records Management System. [Gov. Ex. 36 at PGA 16098.] Also, both the
19 Governor and JI ignore the subsequent major "as-built" verification activities
20 and results from the ITP (see PGandE findings 239, 240, and 242), the IDVP
21 (see PGandE finding 241) and the NRC Staff (see PGandE finding 243) which
22 remedied any earlier weaknesses and verified that "as-built" plant
23 construction was consistent with design requirements. Even Mr. Hubbard, who
24

25 ^{17/} A major revision of Procedure 3.60N (PGandE Ex. 161) which controls
26 as-built requirements is dated May 14, 1983 and was, therefore, not
included in either the INPO or the EDS review.

1 sponsored the only testimony supporting Contention 5, conceded on cross
2 examination that the as-built drawings do reflect the construction of DCNPP.
3 His only area of concern was whether the "as-built" conditions represented "as
4 analyzed" conditions. [Hubbard Tr. D-2157.] As discussed in detail below,
5 the examples alleged by Mr. Hubbard to be instances of as-built conditions
6 differing from "as analyzed" conditions were, in fact, either situations
7 involving a conservative analysis assumption, which, by its nature, cannot
8 agree with as-built conditions (Hubbard, Tr. D-2157), or situations where a
9 difference in professional opinion about an analysis or modeling assumption
10 may have occurred. [Knight, Tr. D-2948; Cloud, Tr. D-1639.]

11 Both the Governor and JI refer to BNL's analysis of vertical response
12 of the containment annulus structure as demonstrating discrepancies between
13 the as-built plant and the design drawings. [Governor findings, 162; JI
14 findings, 55.] However, there was no evidence of such a discrepancy, only
15 "confusion as to whether they (construction details) were as reflected in the
16 design drawings or not." This occurred in the early part of the verification
17 program. [Knight, Tr. D-2946-47.] The evidence, in fact, indicates that BNL
18 uncovered a "modeling discrepancy rather than an as-built discrepancy".
19 [Knight, D-2948.] More importantly, the issue has become moot by the ITP
20 reanalysis, modifications and field walkdowns; IDVP field verifications; and
21 NRC Staff inspections. [PGandE findings 240, 241, and 243.]

22 Relying exclusively on Mr. Hubbard's pre-filed testimony, the
23 Governor and JI allege that certain EOIs (and other items so minor that the
24 IDVP did not even classify them as EOIs) were configuration control errors.
25 [Governor findings, 165, 166; JI findings, 55-60.] As was demonstrated during
26 voir dire and cross-examination in this and the construction QA hearings, Mr.

1 Hubbard lacks any appreciable design or construction experience. [Hubbard
2 Tr. D-2090-2105; ALAB-756, Fn. 10 at p. 10.] Additionally, his testimony can
3 be given no weight when his lack of underlying logic for identifying the EOIs
4 cited is considered; i.e., the impossibility of as-built drawings ever
5 reflecting the as-analyzed conditions when conservative assumptions were used
6 in analysis. [Hubbard, Tr. D-2157.]

7 The Governor argues in proposed findings 167 to 171 that the IDVP
8 review of as-built conditions was inadequate. As these arguments relate to
9 Unit 2, they are addressed in PGandE findings 87-100. As to the other
10 matters, again the Governor has failed to consider the substantial evidence
11 related to the IDVP's as-built verification effort. The IDVP effort included
12 three distinct parts: 1) non-seismic design as-built verification by SWEC, 2)
13 seismic design as-built verification by RLCA, and 3) verification of the
14 as-built process by R. F. Reedy. [Krechting, Cloud and Reedy, ff. Tr. D-1459
15 at 5-1 to 5-4.] Further confusion is introduced in Governor's proposed
16 findings 170 and 171, by ignoring testimony that Mr. Reedy's audits did, in
17 fact, include the as-built process in follow-up audits, which required more
18 than a single day to complete. [Reedy, Tr. D-1637-40.] In summary, the
19 record shows that the IDVP confirmed the adequacy of PGandE's as-built
20 verification effort. [PGandE findings, 239, 241, and 243.]

21 Regarding the Governor's argument in proposed findings 173 and 174
22 that PGandE's as-built Procedure 3.60N (PGandE Ex. 161) has not been
23 implemented in a timely manner, the record clearly shows otherwise. A 30-day
24 limit was imposed for priority drawings and those individuals requiring
25 as-built information were promptly provided with it. [Moore, Tr. D-348,
26 D-360.] All other drawings include as-built information within 90 days.

1 [PGandE Ex. 161, p. 10.] These facts are at sharp contrast to the one-year
2 delay in implementation alleged by Governor in proposed finding 173.

3 The NRC Staff's Case C Study principally addressed an evaluation of
4 causes for the original diagram error and was not an audit or review of
5 current design practices. As is indicated in both the original draft (JI Ex.
6 128) and final draft (Staff Ex. 54) of that study, "Instructions, procedures,
7 and drawings were not reviewed in detail apart from those associated with
8 loadings for the seismic consultant's analysis". [Section 4.0 of Appendix A
9 of JI Ex. 28; Staff Ex. 54.] It is not surprising, therefore, that the final
10 draft has been revised to totally omit any reference to "weaknesses in the
11 basic procedures" cited by JI in their proposed finding 61. As discussed
12 above, all the evidence points to the fact that PGandE recognized the early
13 weaknesses in as-built drawing control and resolved these during the
14 verification effort.

15 16 Contention 6

17 Both the JI and the Governor contend that a verification of all
18 Westinghouse work must be conducted in order to assure that Westinghouse
19 designed safety-related equipment meets licensing criteria. [JI findings,
20 62-67; Governor findings, 176-184.]

21 In so doing, they completely ignore the uncontradicted evidence that
22 Westinghouse had in place a properly functioning QA program which met
23 applicable NRC requirements. [Kreh, Tr. D-1089-90, D-1093; PGandE Ex. 157,
24 Encl. 5, p.4.] The Governor's own witness, Mr. Hubbard, acknowledged that if
25 Westinghouse had an acceptable QA program (as it did) he would have less
26 concern about Westinghouse designed systems at Diablo Canyon. [Hubbard,

1 Tr. D-2146.] Indeed, Mr. Hubbard also agreed that a verification program
2 offers less assurance than original compliance with 10 CFR Part 50 App. B.
3 [Hubbard, Tr. D-2145-46.]

4 The examples cited by the intervenors of purported lapses in the
5 Westinghouse QA program are easily disposed of. The IDVP review of the
6 PGandE/Westinghouse interface and exchange of seismic design information
7 revealed only one isolated deficiency involving the inappropriate use of
8 filtered versus unfiltered tau spectra. [Kreh, Tr. D-1141.] This error was
9 not caused by any deficiency in QA nor could it have been caught by QA.
10 [Kreh, Tr. D-1138-40.] The reference to BNL's discovery of "errors" in 30
11 percent of Westinghouse samples examined by the IDVP is not supported by any
12 evidence in the record. That review confirmed the adequacy of the existing
13 design and revealed that the design input information was consistently applied
14 in accordance with the Westinghouse QA program. [PGandE Ex. 90, Sec. 4.1.3;
15 Kreh, Tr. D-1140-41.] With regard to the main control board, no errors were
16 found in its design which could be construed as Westinghouse design errors.
17 [Kreh, Tr. D-1120-22.] Rather, modifications were required due to changes in
18 auxiliary building spectra as a result of the verification reanalysis. [Hoch,
19 Tr. D-1122-23.]

20 Finally, the alleged concern of a failure to designate or identify
21 each unit on design transmittals to Westinghouse was insignificant since a
22 check revealed that the information was properly applied, (Cooper,
23 Tr. D-1647-49; Reedy, Tr. D-1649-50) and there was a Westinghouse numbering
24 system which distinguished between Units 1 and 2. [Reedy, Tr. D-1650.]

25 //

26 //

1 Contention 7

2 This contention is addressed both by the JI and the Governor. [JI
3 findings, 18-21 and 68-70; Governor findings, 185-202.] The thrust of both
4 parties seems to be that neither the IDVP nor the ITP addressed the basic
5 cause of each and every "error", nor did they properly view the role of PGandE
6 management in design QA deficiencies. The JI go so far afield as to claim
7 that the "testimony of Mr. Hubbard on the issue of root cause was largely
8 uncontradicted." [JI findings, 68.]

9 The JI and Governor are inconsistent in arguing, on the one hand,
10 that the IDVP did not recognize PGandE management's role in design QA
11 deficiencies, (Governor findings, 198-202) and, on the other hand, arguing
12 that Roger Reedy (of the IDVP) "stated, in essence, that such a lack of
13 management commitment was responsible for the seismic design errors discovered
14 at Diablo Canyon." [JI findings, 19.] In fact, both positions are in error.
15 The citation to Reedy testimony is actually to testimony of Mr. De Uriarte
16 (Tr. D-1001-02) where Mr. De Uriarte is reading from the so-called Reedy
17 Report (JI Ex. 129). Upon examination, it can be seen that the report does
18 not say what JI allege. The JI's inaccurate treatment of the record does not,
19 however, lend strength to the Governor's different conclusion.

20 The Governor correctly cites portions of the record where the NRC
21 Staff opined as to PGandE management's role in design QA deficiencies. [Staff
22 Ex. 36, p. C.5-6.] Unfortunately, Governor's counsel also improperly cites
23 the PAC Report and the EDS Nuclear Report (Gov. Ex. 35 and 36) as standing for
24 the same factual proposition. In both cases Governor's counsel grossly
25 overreaches. First, neither PAC nor EDS was even remotely looking for causes
26 of design QA deficiencies in the pre-1981 time frame, or any other time frame

1 (De Uriarte, Tr. D-3148-49; Gouveia, Tr. D-3149-52). Second, neither report
2 states what the Governor would have this Board infer it does state. [Governor
3 findings, 198.] The Governor states that because the IDVP did not "recognize"
4 PGandE management "shortcomings" with regard to quality assurance, its
5 "approach to asserting root causes is not adequate." [Governor findings,
6 198-202.] Apparently Governor's counsel would have this Board reject all of
7 the work of the IDVP in the area of basic causes simply because the IDVP's
8 opinion did not coincide in all respects with the NRC Staff's opinion. This
9 is a most unusual approach for a party whose own opinion has rarely coincided
10 with that of the NRC Staff in these proceedings. For whatever relevance the
11 dispute does have to the final decision of this Board, however, it seems clear
12 that PGandE management did have an adequate commitment to quality assurance.
13 [De Uriarte, Tr. D-1012-13.] The fact that the deficiencies noted in design
14 QA did not appear in the other areas of QA such as construction, procurement,
15 and the like, seems to seriously impair the logic of a postulated
16 all-consuming lack of commitment. Further, the fact that significantly more
17 errors were encountered in the seismic review than in the non-seismic review
18 certainly lends support to the proposition that the basic causes of those
19 errors was something other than a lack of commitment to quality assurance.
20 [Anderson, Tr. D-391-92.]

21 Both the Governor and JI continue to cite the testimony of Mr.
22 Hubbard that "root causes" were not looked at for individual errors by the
23 IDVP or the ITP. Both parties ignore, however, the critical cross-examination
24 of Mr. Hubbard on this point where he painfully admitted that he had never
25 reviewed the non-conformance reports which, for each and every error,
26 identified the cause of each non-conformance. [Hubbard, Tr. D-2163-64.] In

1 addition, both the Governor and JI ignore the final reports of the IIP and
2 IDVP (PGandE Ex. 90, Sec. 1.8; Ex. 91, Sec. 3.0; Ex. 92, Sec. 6.3) which also
3 discuss basic causes of errors discovered during the course of the
4 verification program. Also, both the "Reedy Report" (JI Ex. 129) and the
5 PGandE "Look Back Review" (Gov. Ex. 34) looked at basic causes of QA
6 deficiencies.

7 As in other areas, the intervenors' complaints ring somewhat hollow.
8 They do not point out any facts which they claim were "undiscovered causes,"
9 nor do they point to any errors or non-conformances which they even allege to
10 be inexplicable. Without such evidence their contention must fail.

11 12 Contention 8

13 The thrust of the proposed findings of both the Governor and JI with
14 respect to Contention 8 centers on three points. First, the intervenors
15 allege that the PAC Report and EDS reports demonstrate inadequacies in the
16 PGandE QA Program in place from November, 1981 to August, 1982. Second, the
17 intervenors contend that because 20 to 25% of the ITP effort was performed
18 before the adoption of the DCP QA Program, this work is suspect due to alleged
19 inadequacies in PGandE's QA Program. Third, they allege the work performed
20 under the DCP QA Program, which was used for the remainder of the ITP effort,
21 is suspect because of alleged inadequacies in the DCP QA Program.

22 The JI and the Governor rely heavily upon the contents of the PAC and
23 EDS reviews to support their position that the PGandE QA Program was
24 deficient. [JI findings, 73-78; Governor findings, 206-209.] While the PAC
25 and EDS reviews contain criticisms of PGandE's QA and Engineering Department
26 Manuals, these reviews and their conclusions have to be viewed within the

1 scope of the assignments given to these organizations. As noted by Mr.
2 De Uriarte:

3
4 "We retained PAC Corporation to review the QA Manual versus
5 the commitment documents, the ANSI Standards and the
6 Regulatory Guides which contained the requirements for
7 Quality Programs. And we asked them to take the viewpoint
8 of having the QA Manual contain everything in it, rather
9 than having them review all the other documents along with
10 it. We wanted them to take the viewpoint of if the QA
11 Manual contained everything, what was it that they could
12 identify that wasn't there.

13 And in the case of EDS, we asked them to review the various
14 Quality Control manuals of the various departments. There
15 are six of those. To compare those to the QA Manual and
16 again, to take the viewpoint of having each of those
17 manuals stand alone--to take the viewpoint that the
18 department using that manual could use only that manual and
19 not refer to any other document. What would be required to
20 be put in it?

21 We would then review those results and determine, if
22 anything, what we wanted to do with them." [De Uriarte,
23 Tr. D-3149.]

24 Neither the PAC Report nor the EDS Report were audits or independent
25 evaluations of the PGandE QA Program. [Stokes, Tr. D-3147; De Uriarte,
26 Tr. D-3173-74.] The tasks undertaken by PAC and EDS were reviews of
individual QA/QC manuals and not considerations of the entire QA/QC program.
[De Uriarte, Tr. D-3148-49.] Aspects found by PAC to be missing from the QA
Manual can be found in other manuals or documents in the QA program
(De Uriarte, Tr. D-3152) and there is no requirement in 10 CFR Part 50,
Appendix B that the entire QA program must be contained in only one document.
[De Uriarte, Tr. D-3152; Gouveia, Tr. D-3221.] Therefore, Governor and JI
misconstrue the record in relying on the PAC and EDS reviews as demonstrating
any non-conformance to 10 CFR Part 50, Appendix B requirements. The only
evidence in the record is that the findings of the EDS and PAC reviews

1 disclose no Appendix B violations. [De Uriarte, Tr. D-3156.]

2 JI advances two major criticisms of the PGandE QA Program: 1)
3 "PGandE's QA Program was in essence a number of relatively autonomous programs
4 implemented by different departments," (JI findings, 73) and 2) the PGandE QA
5 Program occupied a level within the organization which did not have sufficient
6 authority to conduct its activities with the independence required by 10 CFR
7 Part 50, Appendix B. [JI findings, 74.]

8 To support JI's first criticism, JI point to statements made by
9 witnesses Gouveia and Stokes, respectively. [JI findings, 73.] A review of
10 the transcript shows these statements lend absolutely no support to JI's
11 position. In both instances the statements quoted refer to the preference of
12 having the QA Manual be a comprehensive document. [Gouveia, Tr. D-3221-22;
13 Stokes, Tr. D-3218-19.] Neither statement addresses the JI's criticism. In
14 fact, the evidence is uncontradicted that neither PAC nor EDS were able to
15 draw such a conclusion within the scope of their assignments. [De Uriarte,
16 Tr. D-3148-49; Stokes, Tr. D-3184-89; Gouveia, Tr. D-3199.] Nothing presented
17 by the JI disputes this evidence.

18 As to the second criticism, Mr. De Uriarte explained that, although this
19 was a criticism expressed by several reviewers, it was his experience that the
20 current management support was more effective than when QA reported to a
21 different level. [De Uriarte, Tr. D-918.] In fact, the line of QA reporting
22 will be changed to a higher level subject to NRC approval. [Skidmore,
23 Tr. D-850-51, D-1027-29.] Even without this change, the program meets the
24 requirements of Appendix B. [Skidmore, Tr. D-1029.] Assuming arguendo that
25 the JI are correct in their criticisms, the record is totally devoid of any
26 evidence that the structure of the QA/QC program or the line of reporting

1 authority contributed to any failing in the QA program.

2 Both the Governor and the JI contend that the DCP QA Program was
3 inadequate on several grounds. First, because the Staff only reviewed the
4 Bechtel Topical (Governor findings, 210, 211; JI findings, 79); second,
5 because the IDVP audit of the CAP disclosed 24 conditions; (Governor findings,
6 212-216; JI findings, 81-85) and third, because of findings from certain QA/QC
7 program audits. [Governor findings, 218-219; JI findings, 80.]

8 As to the Staff review, it is quite clear that the Staff reviewed and
9 approved the DCP QA Program in terms of PGandE's licensing commitment,
10 concluding that the present program represented an adequate commitment to
11 Appendix B. [Haass, Tr. D-2977-79.] More importantly, there is no evidence
12 that the DCP QA Program failed to meet any PGandE licensing commitments.

13 On the second point, the Governor and JI take much liberty with the
14 evidence. The Governor characterizes the conditions identified by the IDVP as
15 failures to meet the requirements of the Program. The JI characterize the
16 same findings as deficiencies in the DCP QA Program development and
17 implementation. The evidence is found in ITR-41.

18
19 "It was determined that the DCP has a sound QA system which
20 is effectively implemented. No audit findings were
21 identified which could have either a potential or real
22 impact on the quality of the corrective action design
23 activities. Twenty-four (24) conditions were noted in the
24 QA, piping, civil/structural and electrical disciplines
25 during the audit. The significance of each initial
26 condition noted has been evaluated and in no instance was
determine to have an impact on the control of design as
related to the Corrective Action Program. These conditions
were determined to be due to incomplete documentation,
because this audit was performed in the early stages of the
DCP QA Program implementation." [PGandE Ex. 133, p. 1-2.]

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1 The JI imply that the IDVP failed to review the DCP QA Program. [JI
2 findings, 79.] This is contrary to the evidence. Mr. Reedy testified that
3 the IDVP audit in November 1982 reviewed the procedures and the implementation
4 of the manual and procedures being used by the Project which were the same
5 procedures used by PGandE prior to August 20, 1982. [Reedy Tr. D-1658.] Mr.
6 Reedy further noted that the Phase II Report, ITR-42, reviewed the PGandE
7 manual and procedures in effect and used from November 1981 to August 1982 and
8 found no significant problems. [Reedy, Tr. D-1661; PGandE Ex. 134; Cooper,
9 Tr. D-1666.] Therefore, the inference sought to be drawn by the JI is not
10 supported by the evidence.

11 On the other hand, the Governor takes the position that the items
12 which were found to be unauditable in November were never found to be
13 satisfactorily implemented. Contrary to the Governor's assertion, the IDVP
14 did review the unauditable conditions. As noted in ITR 41:

15
16 "During the initial audit, a number of activities were
17 found to have been initiated, but not completed or fully
18 documented. The follow-up audit allowed for the review of
19 a greater volume of documentation which resulted in a more
20 accurate appraisal of the QA Program implementation. The
21 combined results from these audit show that the QA Program
22 is being effectively implemented. The conditions noted are
23 those conditions observed during the initial audit, which
24 was incomplete because the DCP QA Program was in the
25 initial stages of implementation. The resolutions of these
26 initial conditions are the results observed during the
final audit." [PGandE Ex. 133, p. 11.]

23 Neither the Governor nor the JI offer any evidence to controvert the
24 IDVP conclusions.

25 The Governor also relies upon the Bechtel Management Audit of the DCP
26 QA Program as an instance of a failure in program implementation. [Governor

1 findings, 218; Gov. Ex. 33.] To the contrary this audit concluded that the
2 DCP had an effective QA Program. [Gov. Ex. 33, p. 1.] Furthermore, Mr.
3 Jacobson's testimony indicated that despite the audit findings, the overall
4 procedures were being effectively implemented. [Jacobson, Tr. D-940-43.] The
5 fact that an audit discloses some areas which need attention does not indicate
6 a failure in a QA program. To the contrary, identification of areas for
7 attention tend to establish that a QA program is functioning. Even Mr.
8 Hubbard agreed that a fully functioning QA program would not result in zero
9 defects. [Hubbard, Tr. D-2130.]

10 The intervenors refer to Engineering Quality Control's audit of the
11 Engineering Manual to argue failures in the QA Program. [Governor's findings,
12 219; JI findings, 80.] As noted by Mr. Jacobson, this was a non-Project QA
13 activity conducted by PGandE Engineering Quality Control, which helped
14 contribute to the Project's complying with its QA Program. [Jacobson,
15 Tr. D-961.] Mr. De Uriarte pointed out that the results indicated that the
16 elements of the procedure were satisfactorily implemented. [Gov. Ex. 40, p.
17 2; De Uriarte, Tr. D-1056.] He further explained the findings must have been
18 extremely minor in nature since Mr. Ralston, Chief of Engineering Quality
19 Control, only issued a discrepancy report to EQC to do a follow-up audit and
20 not to the individual departments. [De Uriarte, Tr. D-1057-58.] Despite the
21 inference sought to be drawn by both the Governor and JI, this audit is also
22 evidence of a functioning QA program.

23 The Governor makes much of the fact that the matrices in Gov. Ex. No.
24 37, 38, and 39 depicting the internal design interfaces are not complete.
25 [Governor findings, 220.] First, they do not address interfaces for
26 contractors, as alleged by Governor, but are only for internal design

1 interfaces, e.g., Governor Ex. 37, p.1. Furthermore, such internal interfaces
2 are defined in written work requests with the matrix summarizing the
3 information after the fact. [Jacobson, Tr. D-927.] Additionally, the use of
4 a matrix is not even a QA requirement. [Jacobson, Tr. D-3167.] Additional
5 evidence confirming the adequacy of internal interface control is found in
6 Governor's exhibits 48 and 49, the checklists for the IDVP QA audit which show
7 this area to have been audited and found to be satisfactory. [Gov. Ex. 48, p.
8 23; Gov. Ex. 49, p. 23.]

9 The Governor and JI maintain that the ITP failed to timely implement
10 a design QA Program. As noted above, in each instance the evidence relied
11 upon clearly does not support the inferences sought to be drawn. Therefore,
12 the Board should reject Governor's proposed findings 203-221 and JI proposed
13 findings 71-85 as not being supported by the evidence and the intervenors
14 should fail on Contention 8.

15 16 Contention 9

17 JI propose findings regarding Contention 9 that are both irrelevant
18 to the contention and incorrect on the evidence adduced at hearing. [JI
19 findings, 86, 87.] The contention as originally stated was that PGandE had
20 failed to provide adequate assurance of component cooling water system (CCWS)
21 heat removal capacity and that a technical specification limitation does not
22 provide an equivalent level of safety as does compliance with GDC-44.
23 PGandE's proposed findings responded to the contention. [PGandE findings,
24 329.] No evidence was ever presented as to how the technical specification
25 limitation does not provide an equivalent level of safety to compliance with
26 GDC-44. As a result, JI now propose a finding that the technical

1 specification limitation advanced by PGandE is inadequate because it may cause
2 the plant to be shut down more often than planned which would erode "the
3 original margin of safety." In the first place there was no testimony that
4 plant shutdowns have safety implications. The Staff witness only testified he
5 was not aware of what implications JI's attorney was referring to (in his
6 questions) and that there is a value in avoiding challenges to the systems
7 involved in plant shutdown. [Wermiel, Tr. D-2885.] ^{18/} Counsel for JI
8 attempt to take this testimony one step further by assigning a safety
9 significance to plant shutdowns which has no basis in the record. In the
10 second place it is highly unlikely that a rise in ocean temperature will cause
11 the plant to be shut down because the normally isolated second CCWS heat
12 exchanger must also be unavailable for at least six hours. This is highly
13 unlikely because it is a passive component and is expected to be unavailable
14 only on rare occasions and then not for any significant length of time.
15 [Connell, Tr. D-546, D-551; Wermiel, Tr. D-2900.]

16 17 Conclusion

18 It is respectfully submitted that both the Governor and JI have
19 failed to provide evidence, either by direct testimony, exhibits or
20 cross-examination, which effectively counters the evidence presented by PGandE
21 and the NRC Staff regarding the adequacy of design at DCNPP. The
22 preponderance of credible evidence adduced at hearing ensures that the design
23 of DCNPP is in conformance with the design criteria and commitments set forth
24

25 ^{18/} The PGandE witness stated there were no safety implications to plant
26 shutdown. [Connell, Tr. D-561.]

1 in PGandE's license application and FSAR. This Board, based upon the evidence
2 before it, can conclude with reasonable assurance that the DCNPP as designed
3 can operate without undue risk to the public health and safety. This
4 assurance is at least equal to the adequate confidence provided by compliance
5 with 10 CFR Part 50, Appendix B.
6

7 Respectfully submitted,

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22 Dated: January 4, 1984

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION '84 JAN -9 A11:04
BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

OFFICE OF SECRETARY
DOCKETING & SERVICE

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

CERTIFICATE OF SERVICE

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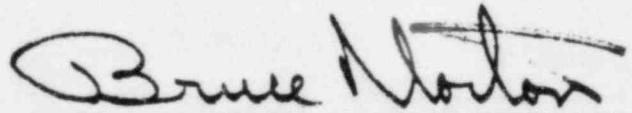
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