NUCLEAR REGULATORY COMMISSION

In the Matter of:

MEETING WITH PACIFIC GAS AND ELECTRIC COMPANY

TO DISCUSS SEISMIC DESIGN REVIEW,

DIABLO CANYON UNIT 1

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

MEETING WITH PACIFIC GAS AND ELECTRIC COMPANY

TO DISCUSS SEISMIC DESIGN REVIEW, DIABLO CANYON UNIT 1

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Nuclear Regulatory Commission
Room P-118
7920 Norfolk Avenue
Bethesda, Maryland

Thursday, April 1, 1982

The meeting was convened at 9:00 a.m.

NRC STAFF PRESENT:

R. VOLLMER, Chairman
J. KNIGHT
F. MIRAGLIA
H. SCHIERLING
T. BISHOP
W. HAASS
B. BUCKLEY
L. CHANDLER
J. SPRAUL
R. BOSNAK
P. KUO
F. CHERNY
M. HARTZMAN
R. TEDESCO
B. JONES

PRESENT FROM PACIFIC GAS AND ELECTRIC COMPANY:

J. HOCK
O. DAVIS
W. RAYMOND
R. LOCKE
C. RALSTON
T. de URIARTE
C. PIPER

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PRESENT AS CONSULTANTS FOR
PACIFIC GAS AND ELECTRIC COMPANY:

F. SESTAK, JR.
C. RICHARDSON, JR.
R. CLOUD
W. COOPER
R. REEDY
P. HERBERT
C. DICK
H. FRIEND
W. KELLERMANN
B. NORTON
R. CLARK
M. SHANNON
W. WEMDCAMO
H. LOEY

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P R O C E E D I N G S

MR. VOLLMER: Good morning. Dick Vollmer, Division of Engineering, Nuclear Regulatory Commission; and the purpose of the meeting is to discuss with Pacific Gas and Electric and consultants -- and independent consultants the work that has been done for the Phase 1 verification program on quality assurance. What I would like to do first is introduce the staff here.

John, if you would then introduce your people.

On my right is Jim Knight, Division of Engineering; on my left, Frank Miraglia, Division of Licensing; Hans Schierling, Division of Licensing; Tom Bishop from Division 5; Walt Haass, Quality Assurance, Division of Licensing; Bart Buckley, Division of Licensing.

On the back, first row back is -- can't think of the name.

MR. SPRAUL: Jack Spraul.

MR. VOLLMER: Quality Assurance, Division of Engineering. Larry Chandler, OELD; Bob Bosnak, Division of Engineering; and P. T. Kuo, Division of Engineering.

Also I see that Herb Brown, Dick Hubbard, representing Governor Brown are here, and I will invite their comments at the end of the meeting.

MR. HOCH: I am John Hoch, PG&E's Project Manager for Diablo Canyon. I will introduce the people with me.

Before I do that, let me say that we had intended to be

represented -- to have our representation include Don Grant, vice-president, Engineering, and Jeff Schuyler, vice-president, Nuclear Power Generation. Mr. Grant's wife was hospitalized and he had to remain home. Mr. Schuyler is flat on his back. I hope he has made it to his bed now -- lying on his bedroom floor with a back ailment. So we were unable to do that -- to bring them with us today.

However, we do have a group of people that will include the following. To my left is Howard Friend who is with the Bechtel Corporation and is Bechtel's project completion manager with Diablo Canyon. To my right is Warren Raymond, PG&E's manager, Quality Assurance. To his right, Charles Dick from Bechtel Corporation, and in the row behind us Bill Kellermann from the Bechtel Corporation. Richard Locke and Bruce Norton, attorneys for PG&E. Chuck Ralston who is manager, Engineering, Quality and Assurance -- Quality Control -- I am sorry -- for PG&E -- and Tom de Uriarte from the Quality Assurance Department.

I note that there are a number of people here from the independent verification program. Doctor Cooper, Doctor Cloud and Mr. Reedy and I will ask Doctor Cooper if he will introduce those people.

MR. COOPER: I am Bill Cooper from Teledyne Engineering Services, the program manager for the Phase 1 design verification program.

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To my left, Roger Reedy and Paul Herbert of Reedy, Inc. To my right, Bob Cloud and Hanson Loey from R. L. Cloud and Associates, and back here Carl Richardson, Frank Sestak from Stone & Webster Engineering Corporation who we plan to have involved in the Phase 2 program.

MR. VOLLMER: Okay. Could I ask the others to indicate who they are, please, for the record?

MR. DAVIS: Owen Davis, Pacific Gas and Electric Company, Washington, D. C., office.

MR. PIPER: Chris Piper, Pacific Gas and Electric Company, news bureau.

MR. WEMDCAMO: Bill Wemdcamo, American Nuclear Insurers.

MR. SHANNON: Mike Shannon, Western Electric.

MR. CLARK: Richard Clark, O'Donnell and Associates.

MR. VOLLMER: Okay. We are sending an attendance list around. Please make sure you are identified on that and as part of the -- part of the meeting please be sure to speak up. We don't have mikes available and it is being transcribed. We want to get everything clearly understood.

The purpose of the meeting again is -- is for the staff to discuss and fully understand the findings of the QA audits that were performed as part of the Phase 1 verification program, and secondly to hear from the company, the independent auditor, regarding -- if it's appropriate at this time, any possible implications or conclusions that one could draw

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regarding the Phase 1 work or any possible conclusions that could be drawn extending into the Phase 2 program.

As part of this we would like to understand and hear from Mr. Reedy and company on how specifically the audits were conducted. We would like to understand what criteria were used in the audits. We would like to understand the conformance of the work that was done for this particular activity to the commission order which defined what was to be done for the Phase 1 work; and to the extent that we can do so, we'd like to discuss the -- how the findings and the conclusions are indicative or symptomatic of any problems that might exist. In particular, whether or not they would be symptomatic of problems further beyond Phase 1 that would indicate specifically needed extension of the Phase 1 activity.

I recognize that it may not be possible for the -- Doctor Cooper's company -- I don't know how much time they have had on this -- to give us any findings in this regard as managing the verification project. I do understand, John, that the company has written or is writing a letter discussing their observations.

MR. HOCH: Could I address that just for a moment?

MR. VOLLMER: Yes.

MR. HOCH: At the beginning. PG&E has, of course, reviewed the Reedy quality assurance report on safety-related activities performed by PG&E prior to June, 1978. The company

does not concur with a number of findings and conclusions in the report. I think our disagreements with the report are in three major areas. In many cases we believe the conclusions made are overly broad, reach conclusions that are more conservative than the detailed findings support. In other cases we think the criteria against which the PG&E program and its implementation were judged were unnecessarily strict and perhaps in some cases inappropriate. Also it's apparent in reviewing the report that there was some information which I feel should have been reviewed by Mr. Reedy and included in his -- in developing his conclusions, which was not -- which was not reviewed. We expect that today's meeting will provide the staff with additional clarification. Certainly concerning the scope of the QA review, the findings, the basis for the findings and the conclusions.

We are here to provide our assistance. We hope that the clarifications provided today take care of all our concerns about the report. To the extent that they don't we may wish to comment further today or perhaps to submit something to you in writing.

MR. VOLLMER: Frank, do you have any comments?

MR. MIRAGLIA: No.

MR. VOLLMER: Tom?

MR. BISHOP: No.

MR. VOLLMER: Okay. Then I would suggest if we could, to turn the floor over to -- to Doctor Cooper.

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MR. COOPER: Yes. We would like to make about one page worth of comments on the scope of the review that was conducted just to be certain that everyone recognizes what the definition of the Reedy review of PG&E was, and I would like Roger to report on this.

MR. VOLLMER: Fine.

MR. REEDY: The scope of the review can be broken down into three small parts, and I will give you a copy of what I am reading. I wrote it by hand so I didn't have the time to get it Xeroxed. The report only addressed seismic safety-related design activities, and this was from the initiation of design activities to June of 1978. I want to accent that it was seismic design that we were reviewing. The criteria that we used was Appendix B of 10 CFR 50.

The second item is that the QA review, seismic design QA review, was only a part of the independent design verification program. In other words, you have to take everything in context, and this is one part of a program. It was used only to help determine the adequacy of the independent design verification program, sample size and selection.

In other words, this is related to the sample size and the selection of the program. The sample size and selection may be reconsidered on the basis of the results of this review. That was the purpose behind it.

The third item is that the seismic design QA review was

not intended to and did not study the complete PG&E QA program. The review as structured and reported is inadequate to study the overall PG&E QA program with regard to the construction and operation.

Attempts to use the report as a commentary on activities not addressed in the report can only lead to unsupported conclusions.

MR. VOLLMER: Thank you. Okay. I think I fully understand your statement of the scope and your items. However, I am not sure I quite understand what you are driving at on Number 2 as to the purpose, and I'd appreciate it if you would maybe restate it and expand on that a little bit.

MR. REEDY: All right. The idea that this is a portion of a program, we did not do, for example, a regular QA audit as you would regularly expect people to do with activities are going on concurrently with construction. We did a historical review of what has occurred in the past so the conduct therefore varied, and we were looking to see as I felt the results of our report would come out would have a direct bearing on the design verification. In other words, as we would review each subcontractor, for example, it would be necessary for the program to come back and say now what effect does that have on the sample that we are reviewing? For example, on the Harding Lawson report we reported that there was no QA program used or implemented in that. I gave that information to Mr. Cloud.

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Mr. Cloud then came back and used another way of reviewing the work that was done by Harding Lawson to ascertain whether things were right, and that is the context of my second statement there.

MR. VOLLMER: Thank you. Walt, you had your hand up.

MR. HAASS: I was going to ask the same question.

MR. VOLLMER: Oh.

MR. HAASS: I didn't understand.

MR. VOLLMER: Could we then proceed? I think it was indicated we would like to hear more about how the audits were conducted in terms of procedures that were used, the types of documents that you reviewed and discussions you held. I realize it was a historical audit and perhaps we would have some questions on the criteria. I understand you say just Appendix B, and I guess that's fairly clear, but I think our QA program may have some questions on exactly how far one takes it in detail for the criteria that were used. I think you did also mention N45.2.11, which was also mentioned in the commission's order; and, of course, we do understand that the construction permit application did not reference that, but it just provided a guidance that could be used for the design verification process.

So I will let you proceed then.

MR. REEDY: If you are looking for the criteria that were used, we did use Appendix B 10 CFR 50. We used the eighteen criteria and reviewed each organization to find out how the various activities that they carried on were applicable to the

eighteen criteria. For some you would have some criteria that were applicable. For others you would not. We used N45.2.11 to the extent of using that as a guideline. In other words, we did not pull out certain -- certain things had to be done but as a guideline -- for example, on design verification. It explains very well the three activities in design verification as to how you would approach it. Our method of doing the review was to take each organization's QA programs -- and I will accent the plural there -- and from them make an evaluation to the eighteen criteria as they would be appropriate.

After we made our evaluation and wrote down the results of that, we then would review the program, pull out statements that we felt were appropriate to find out if indeed the organization did follow the steps that they had outlined in the program.

On that basis we made up a checklist. Both the program review and the checklist were made up and distributed before we started the actual audit. As we went through on the audit, we would use the checklist to verify various activities in various time frames. Now again, looking at the historical portion of that, we had -- sometimes you would have information available in one time frame but not another because the activity occurred later, but we answered the questions that we had put together from the checklist and then the report was written on the conclusions of the programatic review and implementation audit.

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MR. HAASS: Question, Roger. Focusing on PG&E for the moment, did you look at the PSAR, the program that was described in the PSAR?

MR. REEDY: No, we did not.

MR. HAASS: Of course, that was an early program. That was reviewed by the staff back in 1970 to determine conformance to Appendix B. At that point, of course, there were no regulatory guides or other standards referenced in the document. We do note that PG&E did revise their program over the years. In '72, '74, '75 and to '78 -- '77 and '78 where changes were made. Were those tied into the review also? In other words, I understand you had a difficult problem because things were changing over the course of the years and work was done at some time against some program. The program was changed. Other work was done. It gets rather complex.

I am just wondering how did you handle that aspect of it?

MR. REEDY: Well, we were trying to handle it on the basis of the NRC order which says Appendix B, 10 CFR 50, and it was not a question whether that was the appropriate criteria, but to carry on the review on the basis that that was the criteria to be used.

I think it is important to understand that the QA as written in the original 1970 Appendix B has had a lot of interpretations that were put out in safety guides and then in regulatory guides and then in adapting or adopting various -- the

rainbow books, for example, the N245.2 series as an educational progression of changing standards in QA, and this occurred starting about 1970 and went on to the present time so you have a knowledge increase as to what is required in QA as interpreted by the NRC, but we were not taking that into account because the criteria established in the order was take 10 CFR 50, Appendix B, and I think that is the comment that John Hoch brought out earlier, that this is a strict criteria when you use the end result to compare to the learning curves that goes on over a period of twelve years.

MR. HAASS: So you basically used Appendix B?

MR. REEDY: Yes.

MR. HAASS: And then you looked in the programs to see whether there was a procedure or policy or some direction in the manual that would indicate that a program was established consistent --

MR. REEDY: Yes.

MR. HAASS: Did you have to face any questions of interpretation or -- in other words, as you note, there are lots of -- lots of guidance developed over the ensuing ten, twelve years, and for implementation of Appendix B -- and you must have been faced with questions at the time the review was -- of the programs as to whether they were fully responsive to Appendix B. How did you make that determination?

MR. REEDY: The way to make -- the way that we felt we

had to make the interpretations that were required was to use a strict interpretation of today's requirements and again apply that to what was the earlier -- I guess what was the early interpretation because we didn't feel that we could go back and historically remember what the interpretation was in 1972.

Also the order in my mind was very clear that you take today's rules and apply it backwards to a plant that was twelve or fourteen years in construction to a learning curve in the industry that was growing over that same period of time. So I am not giving you the impression that I agree with the criteria but the criteria that we used was the strict today's interpretation.

MR. VOLLMER: Could you possibly give us an example of where the Appendix B criteria were -- or at least your interpretation of utilizing them in that time frame with over -- you used the word "strict".

MR. REEDY: Let me say that we are -- the whole review is a design review, and if you go back in time and -- and I have a great number of years of experience as a manager of design in the petroleum industry, in the nuclear industry, the space industry, what have you; and the QA as applied by many organizations has been on equipment because equipment is something that inspectors can measure. They can feel. They can look at it, and there has been an intimation, so to say, when you get the same inspectors to look into a design organization.

People who review equipment who can understand how something is being built and what the rules are for verifying what was built become a little intimidated when they walk into a design organization with PhD and master degrees abundantly around don't understand computer programs and don't measure the method of analyses that are being used, fracture mechanics, what have you; and it has been difficult for QA organizations to get involved in the reviews and it has only been recently that people have had a clear understanding of how to go about design reviews.

So if you go back to 1970, many organizations felt that design procedures, for example, were procedures on how you do design rather than how you go about the process of verifying design or the process of communicating with people to get the proper design inputs and outputs, and I think that is the big glitch that we are all talking about. If you look at the industry in general, the design standards, the design methods for control at PG&E are above those used in standard construction.

You know, there is no QA program for the design of high-rises, bridges, all the things that are safety-related in the public domain, so the idea of a design quality program has been difficult for the engineering groups to get accustomed to, and that is why it took the Rainbow Series and the others a period of time to get people accustomed to it.

MR. HAASS: In some instances you found there was no QA program?

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MR. REEDY: Yes.

MR. HAASS: Now, that to me is clear.

MR. REEDY: Now, this --

MR. HAASS: Appendix B called for a QA program and there was no program.

MR. REEDY: What we are talking about when I say that there was no program, not PG&E. It's in the subcontractor organization.

MR. HAASS: Yes, I understand. In other areas you alluded to an area that we are moving in that direction in the last few years where we are requiring the QA organization specifically to perform certain functions, and prior to that time that was not always the case. In fact, in the design area we still do not require specifically that the QA organization perform design verifications. We are looking for somebody who is an expert and certainly somebody who didn't do the work in the first place.

MR. REEDY: Correct.

MR. HAASS: So in your reviews I notice in some of them you said the QA organization was not involved. That led me to believe that you were using recent type of criteria. What I am looking for is word design verification is accomplished, whether they were done by the QA organization or by somebody else.

MR. REEDY: Yeah. Let me correct something you are saying, Walt. We were not looking for the QA organization to

conduct design verification.

MR. HAASS: Um-hum.

MR. REEDY: What we were looking for, is there verification? Was the verification done? Was it documented in a way that there is no question about it? So we were looking always with regard to all the procedures that were used. Were they controlled, documented procedures? And we found an abundance of procedures and memos on how things were to be documented, but they were not controlled in an overall manner.

In other words, the document itself was not -- it would be a memo from a manager to his group, but there was no verification that everyone in the group got the memo.

So we had to use the strict interpretation that if you didn't verify it was received by anyone, we didn't count it; but there was an abundance of memos and things that were done, which I think if you were to go back to how people were operating back in early times, you would find that would probably have been accepted as a valid criteria, and that was where the glitch comes in.

MR. HAASS: In those cases were those procedures that describe how documents should be distributed to assure that the proper people were getting them?

MR. REEDY: In some cases, yes. In some, no.

MR. HAASS: I see.

MR. VOLLMER: Maybe it would be instructive, if you

could, to give us an idea of how the QA organization, the QA program, interfaces were designed in this particular time frame. I don't want to skip ahead here, but one of your conclusions -- one of the illustrative purposes was that quality assurance program for design work was not adequate and so on and so forth, and I wonder if what you are saying now, trying to contrast the quality assurance program with the design program and therefore I am not sure what the interfaces and the working relationships are between the quality assurance program and the design program.

MR. REEDY: The comment that was taken out of our report that had to do with QA people not being adequately involved. For example, the best illustration of that is in the contracts or the agreement between PG&E and design organizations to perform work. Criteria was put out as to how they should operate; and, as you know, there was an absence of any criteria concerning QA with these organizations to begin with; and what we found was that the QA organization didn't have any input into those documents that went out to address people in getting them started on the work, so that is a specific of what we were talking about.

In our mind, if you are going to have a document sent out to someone to have work performed, QA should review that to make sure that the proper QA controls are going to be imposed on the subcontractor, and that is what we meant when we said that the QA was not in it.

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MR. VOLLMER: Okay. I guess that is an example. Let me ask it again then. I seem to hear that you are saying that design process -- and I'm not trying to paraphrase it. I will take a shot at it -- design process seemed to have the right ingredients and controls, but they weren't implemented by any formal quality assurance program, and my question before was, Could you tell me how the quality assurance program, to the extent that it did exist at that time, did interface and/or was involved with the design process?

MR. HOCH: You are talking PG&E?

MR. VOLLMER: Yes.

MR. REEDY: With regard to PG&E, there were procedures that were written. Some were implemented early and written early. Others were --

MR. VOLLMER: Quality assurance or design procedures or both?

MR. REEDY: Design procedures.

MR. VOLLMER: Thank you.

MR. REEDY: Others, for example, document controls and correspondence control really never did -- we never saw the one that you would say during that time frame told people how to control the document, so we ran into the problem that the documents really didn't have the type of controls that you would expect to find in Appendix B type programs. So there was a lack of correspondence and document procedure being implemented

in the time frame that we had. In fact, the procedure wasn't written in that time frame.

MR. VOLLMER: So the procedures were basically written by the design organizations as a way to conduct their design business and they may or may not then have had any review or --

MR. REEDY: Yes.

MR. VOLLMER: Or input from quality assurance type organizations.

MR. REEDY: Yeah. But you would have memos from the chiefs of each of the various branches sent out to their people on how they were to operate, but that was a memo from them to their people and did not have to go through the QA system, you know, for approval and proper setup and distribution and control of that document, so there were procedures on all the work that was done and we were looking for, Could this be verified? That people had it, that they used it. There was very strict interpretation because we were trying to do what the order said.

MR. VOLLMER: Okay. Now, if -- if you -- if these were followed by the people that got them, would the procedures themselves -- even though they perhaps did not have the quality assurance input, the formal quality assurance input, were the procedures themselves adequate to accomplish the objectives of let's say Criteria 3 of Appendix B? I think that is the most important part of what we have to get at here.

MR. COOPER: Let me answer that a moment because it's very important to recognize what Roger said when he said the QA review was only a part of the independent design verification program. Roger's assignment was not to evaluate the adequacy of the design process.

MR. VOLLMER: Right.

MR. COOPER: That is the responsibility of the program as a whole. The QA's review feeds into the program as a whole in providing guidance as to what needs to be looked at and the depth to which it needs to be looked, and I think we can only evaluate the consequences of the procedures that did or did not exist when we've completed the evaluation of the integrated program, have completed the sampling process, and completed what is referred to in the program plan as the, quote, generic, unquote, sample and have expanded that sample as appropriate based on the results of the generic sample and as guided by the results of Reedy's review, but I don't see any way in what Roger has done that we can specifically answer your question.

MR. HAASS: In the Reedy report to PG&E I believe you characterized the PG&E QA program as really -- as a -- as performing an audit type role. It was -- well, I would gather that means that the QA organization was periodically overseeing what went on but was not directly involved, that the primary -- the primary driving force for getting things done correctly were design procedures that were used by the technical people. Is

that a fair way to say that?

MR. REEDY: Yeah. I would like again to put this into the character of design for the design activity.

MR. HAASS: Um-hum.

MR. REEDY: And maybe a way to explain better is, for example, if there were a problem that was found in an audit, the next time the problem was addressed was with the next audit, so primarily you had to go back and -- with regard to the design activities in an audit function. You audit, determine, you know, where you're at, report where you're at, and then come back later and reaudit.

MR. HAASS: How frequent did this occur? If you found a problem during one audit, how long did it take to correct it?

MR. REEDY: Sometimes several audits. Sometimes immediately.

MR. HAASS: Over a course of --

MR. REEDY: Over a course of maybe a year or longer. But this changed. Again you have to put it in the historical perspective and the whole program that we were reviewing is part of '78.

MR. HAASS: Um-hum. You indicated there was an organizational change in '72. Could you note any changes in the effectiveness of the QA program at that point?

MR. REEDY: I find it hard to pinpoint that type of

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thing. I think the answer would have to be yes, definitely, because there was a whole restructuring on how things operated, but if you asked me to pinpoint that as to how it occurred, I really couldn't.

MR. HAASS: But you do feel there was an improvement?

MR. RREDY: Absolutely.

MR. BISHOP: Roger, could I ask you a couple of questions about the mechanics of your audit? Could you briefly tell us how your audit personnel interacted with the PG&E people? For example, how they got their information and how they posed their audit questions to them and then give us a ball park figure of the number of man-hours that went into the PG&E effort?

MR. RREDY: You are only talking PG&E or --

MR. BISHOP: At this point.

MR. REEDY: Or the whole thing? Various groups, for example, the various design subcontractors that we got into the audit would vary in time. For example, the Blume audit was much longer in auditing than we were at EDS. That's easy, dog, sugar.

The EDS system had a notebook that was set out by dividers, and all you had to do was ask this question and immediately they led you to where the answers were. When we got into another organization, it was very difficult to come up with the things.

Now, with regard to what happened at PG&E, we always had

on any audit that we did -- we had a PG&E representative with us, and that was someone to expedite and to help us get the information. For example, it was difficult to go into another organization that we had no contract with and get the information, so we had a PG&E employee there to make the request for the information that we needed. We had a QA person from PG&E with us when we were auditing PG&E to help expedite and how to get the information that we would request.

Right after we did our manual review, prepared our audit checklist, we would show PG&E personnel what it was that we wanted to get into. We selected eight different items that we wanted to specifically review. For example, a certain type of support and its design for support, certain portion of a pipe system, certain portion of electrical equipment, and structural so that we could get a feel for it. So they had all that to help gather information.

MR. BISHOP: May I ask you a question about that? Did you pick the sample or did PG&E pick the sample?

MR. REEDY: We picked the sample. We looked at all the various activities that were going in and then we picked the sample.

(Pause)

MR. BISHOP: Was it PG&E who related your audit checklist question to the contractor or did you do that directly?

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MR. REEDY: When we went into a contractor on the checklist, we took it with us. They had not seen it before we got there.

MR. BISHOP: I am thinking you mentioned that you had a PG&E QA assistant to get you the information on the questions.

MR. REEDY: Well, really when we had a document that we had to get, that's where it was most useful. We asked the questions and we for the -- for the most part the PG&E person would sit there and listen, but he did not participate. There was no participation on his part at all except to help us get the documents.

It's got to be recognized that we had no contractual relationship with any of these consulting firms.

MR. HERBERT: The answer that my calculator came up with was twenty-five man-months on the audit of the seven organizations. Plus or minus.

MR. MIRAGLIA: Doctor Reedy, you refer to the first phase of your review to be a manual review. With respect to the organizations -- and -- did you take the manual that existed in June, 1978, as your starting point as of today?

MR. REEDY: No. We went back and said we want to see all the manuals and all the procedures that were in effect during this time frame of -- in case the subcontractor for the contract that he performed or in the case of PG&E from the initiation of your work all the way up, and there were five

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divisions, I believe in the PG&E work, for example, so we start with the bas ogram and then get each of the divisions, find out how the revisions modified the program, and went on from there.

MR. MIRAGLIA: But you stopped at June, '78?

MR. REEDY: We stopped in June, 1978. Now, in one case, for example, Blume, the final approved program was slightly after that; but we used that for the guideline.

MR. BISHOP: Were you denied access to any information that you requested?

MR. REEDY: No.

MR. BISHOP: Of your twenty-five man-month figure, could you estimate what number of man-months was applied to the PG&E audit?

MR. REEDY: I am going to make a guess. Around five.

(Pause)

MR. REEDY: Bill just made a comment that it is hard to separate what was done because, you know, we didn't just get one company's manual and go on. We worked with all of them, and then we had an interface between the subcontractors and PG&E. When we got into PG&E, we wanted to follow up on how some of the PG&E-- the things that we saw in the subcontractor's house, how they related to what we saw in the PG&E house.

MR. BISHOP: How about situations where the contractor or PG&E was unable to provide you the information? Did you

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explore whether you were talking to the right person in that organization to get it or how did you draw your conclusion that it was -- that no further action to be pursued along that particular line?

MR. REEDY: I can't recall anything other than some early procedures from PG&E that we were not able to get. There were some early revisions because it was built into their program that when you have a superceded procedure, you get rid of the original one. Since we were doing a historical audit, some of the very first ones were a little bit difficult to come by.

MR. BISHOP: Is there evidence of implementation of the QA program or you couldn't find evidence?

MR. REEDY: I didn't see any case where we weren't allowed to get information that we felt we needed.

MR. HERBERT: I think I would have to clarify that. We did find areas where there wasn't information available. Now, how far do you go once you make that determination? You are at a brick wall, and that's how we reported it. We ran into the brick wall, and we went on to other areas of our investigation.

MR. BISHOP: I am referring to Mr. Hoch's comment where he said that your auditing may not have had the benefit of all the information that was available, so I am trying to explore a little bit how you drew your conclusion that you had

looked far enough for a document and you couldn't find it.

MR. REEDY: Well, Mr. Hoch may have a comment on that; but he did mention or someone mentioned to me at one time maybe that document is in our operating QA program, which we did not get into because we didn't think the operating program was applicable to design; and it may have been and, John, maybe you can amplify that.

MR. HOCH: Let me make a comment and I might even be able to find a specific example. Of course, since we didn't see the report until it was issued, published and submitted, a number of people have commented after reading the report -- wait a minute. That is not so. If they had looked at thus and such, we had a project procedure back in -- in 1971 on that I'm sure, and it may have been difficult to find. It may be that we can't find it now, but there have been a number of comments looking at the report. There is information available which obviously wasn't reviewed or wasn't used or just perhaps couldn't be found.

MR. HAASS: Were any questions like that raised when you talked to people, that they couldn't find something but they recollected that something was available and it's not available now?

MR. REEDY: Yes. In the early procedures, for example, people searched -- did various engineers' personnel files to come up with some of the procedures because they weren't

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kept -- because the program said not to keep them. So there was information like that as John said, if people looked further, you might come up with it out of personnel files or it might strike a bell where we did an interview with the people, and we did have an exit interview, and during the exit interview we had quite a few people in attendance. There were approximately twenty-five, and I read to them what the basic report was going to be. I didn't read off the report. I read off notes of what we had found in the summary and asked if you have any information that you feel is appropriate to this comment, please let us know; and we did get one document out of that that we had not seen and I doubt that we would have seen through ordinary auditing procedures except that we struck a bell with someone and they sent it to us. But the number of people that we talked with during the audit was limited as you got into the various phases; and when you get more people involved, it rings more bells and you jog their memory.

MR. BISHOP: One other question. What was the general philosophy, if there was, given to your audit team members regarding conclusions they would draw when they couldn't find documented evidence of a particular item?

MR. REEDY: The primary consideration was, we will consider the document if it's a controlled document. In other words, we felt that our work could be audited by anybody and the only way you could audit what we did and conclusions that we drew

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was on the basis of controlled documented evidence. A piece of paper pulled out of someone's file that shows a certain bit of information to me is not a controlled document, and we based our conclusions and things in the report on those documents that were officially controlled.

MR. BISHOP: Would it be correct to say if you did not find a controlled document that substantiated a particular element of your checklist, you then concluded that that aspect of the QA program had not been implemented?

MR. HERBERT: No. That -- as an example, I pursued the interface at quite some depth between Anco and Wyle and the responsible engineers at PG&E. We could not determine from objective evidence that there was a procedure to control the information flow between these organizations, but I did sit down in discussions with the responsible engineer. We were able to find out that yes, in fact he did submit this information to these companies. He got input back, but in all cases I couldn't establish that that happened consistently, but it did happen. There was no procedure that I found, but in the interview with the people we could reconstruct how it operated.

MR. VOLLMER: So what kind of a conclusion would you have drawn from that particular example?

MR. HERBERT: It was being done but it wasn't being documented consistently.

MR. REEDY: Again, I think that that comment goes back

to the point that we made earlier that we were looking at this as to how this would impact the other portion of the program with regard to the design, so we would report that back to the design verifiers to give them a better feel as to how they should further evaluate activities by that group.

MR. VOLLMER: Did the contractual documents issued in this time frame to people that you did your QA review -- did it mention anything that they had to do in terms of QA or design review or did that vintage --

MR. REEDY: In that time frame the first that we saw was with Blume in late 1977 or early '78.

MR. VOLLMER: In this time frame and I guess for convenience we can pick '75, '73. I don't know what is a good time, but whatever it is, did PG&E have what you would characterize now as a QA manual? That is, QA procedures that were at all applicable to design organizations?

MR. REEDY: Absolutely. They had a manual and procedures that were applicable and that were being implemented.

MR. HAASS: There is some question about whether the manual applied to Unit 1.

MR. REEDY: The question was really back to the FSAR which said it would be a Unit 2 and implemented on Unit 1 as applicable. Someone can correct me. I didn't memorize the words.

MR. HAASS: Did you see differences in implementation

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in Unit 1 and Unit 2?

MR. REEDY: We did not review Unit 2.

MR. HAASS: Oh.

MR. HOCH: If I could correct Roger. I believe you are referring to PSAR.

MR. HAASS: Yeah.

MR. REEDY: Yes. The statement I was remembering from the FSAR said that it would be applied to the Unit 1 to the extent possible or words very close thereto.

MR. HAASS: Dick, I would like to go back a minute. On the question of the strictness of the criteria, would you repeat again -- just to make sure I understand -- what your -- what is your feeling today about the strictness of the criteria you used today to judge to make the statements you make in the reports? In other words, are you saying that -- that it might be unfair to apply the strict rules that existed, say, in '78 to work that was done five, six, seven years prior to that?

MR. REEDY: I have to agree with you that the strict interpretation that we use was completely unfair. The order to me did not seem to be fair to begin with, and I made a comment at the time that the evaluation should be done to the criteria that was in use at the time this program was accepted by the NRC and audited by the NRC, but we did not go back and say we will accept what the NRC audited and what they accepted. We will use the criteria in the order.

Now, I don't think that is fair, but that is what we did.

MR. HAASS: But you used Appendix B?

MR. VOLLMER: The criteria in the order were applicable to design activities in this time frame. No question about that, and Appendix B was appropriate to those activities.

MR. REEDY: Excuse me. I didn't find the words "as applicable" in the order. We have the order in front, and the words "as applicable" are not there. I wish they were because the results of our report would have been completely different.

MR. HAASS: Roger, you used Appendix B as you understood it at that point back at the time that the CP was issued plus the commitments made in the PSAR modified by changes to the QA program that were made by PG&E during the ensuing years. How would that affect what you have told us in the reports?

MR. REEDY: If I had -- have to reconstruct what you said. My understanding is what if the order had said use the PSAR commitment with the criteria, the safety guides, regulatory guides, series in effect at the time for interpretation. What would happen, I would have to do the audit over because we did not use as a guideline what they were committed to perform, so you would have to go back and look at it differently.

MR. VOLLMER: Well, they were committed to do this under the criteria of Appendix B. Do you disagree with that?

MR. REEDY: Are you asking whether PG&E was back in the early time --

MR. VOLLMER: In '75 to '76 -- say '73 to '75. It became effective when?

MR. HAASS: It was applicable to Unit 1 and Unit 2 beginning in 1970?

MR. REEDY: Right. And was to be used on Unit 1 as applicable.

MR. VOLLMER: I guess that is the problem.

MR. HAASS: No.

MR. VOLLMER: This understanding of what is applicable -- I can understand if you say an interpretation of Appendix B has developed over the years. We certainly all agree with that. But I don't know what you mean by "as applicable".

MR. REEDY: If we could pause here, I would like to have John or Warren answer that question as to what the commitment was.

MR. HOCH: Let me make just a couple of general statements. First of all, the date of implementation certainly of Appendix B if I am not mistaken -- it was a 1970 date I think. Now, the document was available for comment a little bit earlier than that. '69 or thereabouts. Certainly a great portion of the Unit 1 design was already done by the time Appendix B became a regulation, became part of the AEC rules and regulations. That is important to put into perspective and the reasons why the statements were made in the PSAR, and I guess I stand corrected. They were repeated in the FSAR. That Appendix B

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would be applied to Unit 2 and the Unit 1 design as appropriate or to the extent possible. I think that is closer to the actual wording because certainly for the portion of the design that had already been accomplished, the work had already been done. It wasn't possible to do that.

I think -- I think the difficulty here if I am not mistaken is not in whether the commitment was made or whether the regulation applied to work that was done after 1970, after the Appendix B was adopted, but really to the fact that even though the words didn't change substantially over the years, if at all, certainly the interpretation of what they meant changed greatly from 1970 up to the present and continue to change.

MR. VOLLMER: Well, I do agree with that, John, and that is why I said what I did before. What bothers me is the "as applicable" rather than how you interpret the criteria in Appendix B.

I have no problem with the thought that perhaps we have changed our feeling of the meaning of the criteria and the details to which they might apply and so on and so forth. No problem with that.

But my question is directed to Doctor Reedy with trying to isolate in time, if you will, the type of activities that you used and I used in 1973, 1975, whatever you want to pick. Are you saying that certain elements of Appendix B as applicable were used in that time frame? And I didn't understand that type

of a statement.

MR. REEDY: Now, what I meant was that the criteria that the plant was built under was a commitment to use the QA program from Unit 2 on Unit 1, and I used the term "as applicable".

John said as practicable or as possible. I am not sure of that term, but that is what the commitment was, and I am saying that we didn't use that in our evaluation. We took the order that says you use 10 CFR 50, Appendix B, and it did not have the same criteria as in the FSAR or the PSAR.

MR. VOLLMER: I don't think the implication in the order was that you use Appendix B whether it applies or not. Appendix B says many places it only applies where it shouldn't apply to the extent it shouldn't apply, and I think the feel we need to get -- what I am hearing here is certainly considerably different from the impression I got when I read the report. I think we have to understand exactly what was used. What was the basis for applicability? And -- and it's certainly related to Appendix B which was an appropriate regulation for that design activity post-'73, '75, whatever -- '70, whatever.

That is the crux of the thing, and I don't think we are getting that.

MR. REEDY: Okay. Let me -- let me talk about criteria 3 which is design control because I think that is

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probably the most appropriate as to what we are talking about. If you look at the document you mention and the papers that we had, it was obvious, for example, when calculations were checked. It was not obvious if there were questions raised in what I call a design verification mode or a design review mode of were the assumptions correct? Were the computer programs or methods of analysis appropriate to the problem that we were analyzing on the evaluation on as-built, the documentation as to what the criteria was for accepting an as-built condition with reference to design condition. It wasn't fully documented.

Now, activities went on. We saw some of the activities that went on, but whether it's not documented and you couldn't verify that they happened across the board, we came to the conclusion that -- you know -- that it wasn't to today's standards; and I hope that verifies what we were saying on the report.

In other words, you know, someone could go back and say, well, why didn't you use the criteria that so many of us were raised in back in the early days of good engineering practice? What was the good engineering practice? In today's world that term to me is extremely difficult to answer. What is good engineering practice? And is yesterday's good engineering practice today's good engineering practice? And what was it in 1975 or 1967?

MR. VOLLMER: I think we all fully understand that and

fully agree that there were excellent design activities performed pre-Appendix B as well as post-Appendix B.

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Tape 3
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MR. REEDY: Right.

MR. VOLLMER: As I said before, we have got to understand what these findings mean, how they relate to the Phase 1 program, so maybe the best thing to do -- unless there are no other questions -- is to -- if we could, go down the findings; and if you could give a clarification or understanding of how you reached the findings, we could probably better understand them. So let's take it from there. We will start on Page 4 of your report. For example --

MR. REEDY: Page 4 of 89, Item 1.

MR. VOLLMER: I guess that finding was one I was referring to before when I asked -- you know -- how did quality assurance interface with design? I guess as I interpret this you are saying that quality assurance was strictly an audit activity.

MR. REEDY: What I wanted to get out before and what we found in here was that the criteria for design control was put together by the engineering group and then audited by the QA group instead of having the QA group integrated in determining the criteria.

MR. VOLLMER: I see.

MR. NORTON: I appreciate this is a technical meeting, and as lawyers I understand that some of the definitions you are using here -- that Doctor Reedy used and I would like to get clarification if I could. The thing that bothers me is my experience basically started with a construction permit for Palo Verde, and I very vividly recall conferences with Bechtel QA people

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and some public service QA people getting ready for the construction permit hearing, and very frequently everybody I talked to had a different viewpoint and not necessarily the staff was most rigid or the utility -- or least conservative or the least rigid but an overlapping.

In some areas the staff was the most conservative. In other areas Bechtel was the most conservative. In other areas their utility was the most conservative, and this was back in the 1972, '73,'74 time period; so given that historical perspective and also we did have as an issue or -- we did have as an issue QA in 1977; so that carries us into that time period; and now here we are again and I frankly am very confused about -- when you say Appendix B applies, frankly that begs the question. The real question is what the hell did it mean to the people, the staff, and the utilities or AE's or the GC's doing business during those different time frames.

I hear Doctor Reedy saying there were five changes made to the program by PG&E in an eight-year time frame, so you -- you have lag time, for example. When you have a change to a program, you might have reasonably from sixty, ninety days to six months to maybe even nine months to implement those changes, and very frankly I am having real problems understanding how Doctor Reedy or anybody else can go back eight -- excuse me -- four to twelve years.

That is what we are talking about. Going back a minimum

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of four years all the way back to twelve years and sorting all that out and saying well, you know, did they comply with Appendix B as they understand it and as the NRC understood it and as it was generally understood in 1971, for example, or 1972? And I certainly haven't heard anything here at this table this morning that does much to clarify that for me, and maybe I am not the only one with this concern, but it does bother me because I am still not sure that we agree on what we are talking about here. I haven't heard it. I am still confused about it, and I frankly get the impression that everybody else is a little unsure of what everybody else is thinking.

MR. VOLLMER: I think I would have to agree with you. That is part of the problem that we are having, and I think as I see it there are two things -- and I tried to make those clear in the beginning. One is we need to state how this activity comports with the commission order, and - and Roger indicated that he used the commission order and he applied Appendix B and so on, and that is the basis of some of the findings; and secondly, I said something to the effect that we need to understand the significance of these findings as they relate to the design process because much of the design was done before Appendix B was in effect a regulation.

Secondly, we all agree that the meaning Appendix B has changed in the eyes of the beholder from year to year, and thirdly because something -- and this is a more difficult thing to phrase -- but the gist of it is -- if something was not designed to the

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rigorous -- as we interpret it now -- Appendix, does not necessarily mean that the design process was defective, and I think the technical people in here need to understand what insight Doctor Reedy and his people give us as they perform this process just as we need to understand the process that Doctor Cloud went through in his findings of a more technical nature.

If you want to add something, I see that's sort of as the gist of the meeting.

MR. NORTON: I am not sure. I think I understand, but we haven't talked about the independence thing, and that kind of puts us in the same boat you are. We have a lot of questions too. As I understand it, basically what he applied was what people understand Appendix B to require today -- to 1970 activity, to 1971 activity, 1972 activity, et cetera, et cetera.

MR. VOLLMER: Is that correct?

MR. REEDY: That is absolutely correct. And let me straighten the record out on one thing. I am not PhD. I am not a medical doctor.

(Laughter.)

MR. REEDY: I am not even a dentist.

(Laughter.)

MR. HOCH: Dick, could I do a housekeeping item? I keep breaking in to do housekeeping items, and I have to do that and let me correct the statement. Following submittal of the Reedy report as we have generated our concerns and comments, we have

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discussed at least in general terms our concerns about the audit with Mr. Reedy and with Doctor Cooper and with Doctor Cloud. Those - we have apprised them of our concerns, that they have been discussed. I think in the last two cases by telephone with Mr. Reedy and with Mr. Cooper and probably both by telephone and in person with Doctor Cloud.

MR. NORTON: The way I meant the lawyers. I have questions.

MR. VOLLMER: In response to Bruce's, I am trying to put on my 1972 hat as chief of the quality assurance branch here and the objective in looking at these things -- and I certainly agree. It was never clear to me from reading in that you were applying current-day criteria which I would indicate is embodied by the ANSI standards and additional regulatory standards in the application of that. I thought you did a fairly careful job of defining an Appendix B requirement and evaluated the literal interpretation of that requirement, which I thought was appropriate. N45.2.11 and so on goes into more detail into different ways to implement that, and I have thought that that would be used if anything as guidance in saying, Hey, here is what they did, and that happens to be one of the types of things that you could use under 45.2.11 to implement the Appendix B criteria.

MR. REEDY: Maybe I can make a comment, Dick, that if the criteria were to be -- you know -- go back and was it appropriate to the criteria at that time, I think any auditor would have a very

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difficult time interpreting what the interpretation was at that time.

MR. VOLLMER: I agree.

MR. REEDY: So my understanding of the assignment was use today's criteria of Appendix B as stated in the order and look at what was done in a historical perspective. On the basis of the report that is generated there, you then have an idea as to what the design verification should further consist of.

MR. BISHOP: In other words, you are not going back to evaluate the PG&E QA program. You are trying to say take today's standards, look at what was done and how does this influence how our design verification program will proceed?

MR. VOLLMER: So you are saying --

MR. REEDY: And if you use today's interpretation, everyone generally has a better feel for what we are talking about. It's something that can be audited. If we had to go back and try to remember the interpretation of an interpretation back in the early stages, it would be open to criticism by everyone in the world.

It would be extremely difficult to substantiate what the interpretations were because the guidelines in 1970 weren't there. The plant had the construction permit before the Appendix B came out. How far back do you backfill? All these questions of interpretation would be difficult to judge, so we are trying to put in today's terms so that you could evaluate the impact of

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those results on the design verification.

MR. VOLLMER: So let me ask you this question then. Are you saying that you performed this activity in the same manner that you would do it if you were given the assignment to go out and monitor a current plant, ongoing design, to Appendix B, with all of its glorious trappings?

MR. REEDY: Yes.

MR. VOLLMER: You did this audit. You are saying now the same way you would do that assignment?

MR. REEDY: That's correct.

MR. HAASS: Did you use the regulatory guides and the ANSI standards?

MR. REEDY: We looked at the regulations and the ANSI standards where we had any questions of guidance. We looked at it for guidance. Now, we did not copy down and say, Do you have this, this, and this as expressed?

If you look at our check list, you will see that we didn't do that.

MR. HAASS: Did you use the standard review plan?

MR. REEDY: Yes. But we didn't use it in a check list.

MR. HAASS: Because Appendix B has not changed.

MR. REEDY: That's correct.

MR. HAASS: From the 1970's?

MR. REEDY: Yes. But the interpretation of the words have changed tremendously.

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MR. HAAS: Well, with regard to interpretation, I think we ought to go through the findings here, but there was some that became rather clear. You go to Item 8. Appendix B calls for that, and then under Item 1 of your implementation deficiencies you find did not see that. That is black and white. Not subject to interpretation. Appendix B calls for it and you didn't find it.

Now, when you go to document control, you say there was no document controls -- no provisions for document control, but now I go to your Item 5 on Page 689, and it says there was no effective document control, so now it's subject to some interpretation. Was there some document control system and in your view was it effective to today's standards?

MR. REEDY: There were memos on how you control documents, and we found the memos, but they weren't across the board. They might be in one group and not the other.

MR. VOLLMER: If they do go through the findings, we might get more insight. The last few minutes were very revealing to me. I guess I didn't understand how the audit was conducted.

Okay. We have I guess covered Item 1 on the findings. In about twenty minutes we will take a break. Is that all right?

THE COURT REPORTER: Yes.

MR. VOLLMER: Okay. Finding 2. Will you proceed?

MR. REEDY: In Finding 2 what we did was make comparison between the program that existed at that time and the eighteen criteria as they would be applicable to the design, and we found

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the gaps in the program in our estimation of it.

MR. VOLLMER: So that is the meaning behind it? Let me ask. You said there were gaps. Did they have any procedure which was intended to accomplish that activity?

MR. REEDY: No. There was no procedure and I don't know that a procedure is really requied.

MR. VOLLMER: Okay.

MR. REEDY: All I'm telling you is that -- you know -- if you take the statements and do -- make a matrix out of it, you find a certain gap and it's my interpretation of a gap --

MR. VOLLMER: Yeah.

MR. REEDY: For example, there has been an awful lot of discussion about Item 8 which is management review of the QA program; and there was management review of all the changes at the program. There was management review of all the audits, but the verification of that was extremely difficult to find. It wasn't documented that we could pull out as a controlled thing that yes, this occurred. It occurred because you might see a signature on someone's revision to the program but -- another one as an example would be training and indoctrination. There was a statement in the program that there would be training and indoctrination but nothing as to how it would be done. That you will do this. Each manager will do that, et cetera. We put down this as a programmatic deficiency in the respect that no detail -- just addressing it as an overall thing -- it wasn't provided, but

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other people could make a different interpretation of that. The fact that it did address it could be interpreted differently.

MR. HAASS: Under implementation deficiency you don't address that point. In other words, when you look at the program, you found that indoctrination and training was not addressed; but if I look at implementation deficiencies, you don't address that. Yet there were several others under programmatic deficiencies that you say were not in the manual, and yet you cited also -- I see a dichotomy here.

MR. REEDY: On the training one, there was nothing that we could find on the implementation at all. In fact, if it wasn't in the program, there was nothing you could audit that to.

MR. BISHOP: So you concluded there was no indoctrination or training?

MR. REEDY: It wasn't formalized and documented to the extent that you had controlled documents showing who received what training when, on what subject.

MR. HAASS: That is a black and white item?

MR. REEDY: Yeah.

MR. VOLLMER: Okay. I think we have completed 2, have we not?

MR. REEDY: Yeah. And that is during that time frame.

MR. VOLLMER: Yeah.

MR. BISHOP: Before we leave 2, one last question. I want to put a little boundary around this from your perspective.

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Again you are saying this was only -- this conclusion applies to design activities, seismic design activities, all design activities?

MR. REEDY: Seismic design activities. In other words, we stayed away from other things which also makes this a different assignment. We only work with respect to seismic design safety related activities during this time frame of design activities through June of 1978.

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MR. HAASS: But for some activities -- some of these items you can't distinguish. There was not a QA program for seismic activity and nonseismic. That was only one.

MR. REEDY: Yeah. But in looking at the records of people who were involved in the seismic design, you don't see anything under training. That doesn't mean they didn't have a training program that was completely effective in other phases of the activity.

MR. HAASS: Yes. If you look at programatic, you didn't expect to see training called for whether it's seismic or nonseismic?

MR. REEDY: Right. But it doesn't say they didn't have a requirement and they didn't follow it out in other activities, so I say this only relates to design, seismic-related, et cetera. I am not trying to dodge an issue. I am trying to make sure we are completely in agreement on what this scope was.

MR. HAASS: On Phase 2, which is nonseismic --

MR. REEDY: Ye..

MR. HAASS: And --

MR. REEDY: It will take it from January, 1978, seismic safety-related, up to the present time and all the other safety-related nonseismic.

MR. HAASS: The review of the program, the programatic deficiencies -- Will you look at the program again to find out whether there were deficiencies for nonseismic?

MR. REEDY: Okay.

MR. VOLLMER: Finding 3. Seems like that is sort of like the finding before. What is behind that finding?

MR. REEDY: Well, there was a procedure number for control of documents -- for document control of correspondence and design documents; but it wasn't published until after the time frame that we are in; and that is the meaning behind the comment.

MR. HAASS: So for Phase 1 --

MR. REEDY: It wasn't there, but we saw the document. It is there. But it's in Phase 2.

MR. VOLLMER: Um-hum.

MR. HAASS: That is a black and white item?

MR. REEDY: Yes.

MR. VOLLMER: Now -- now, this -- I asked you before and you said there indeed was a quality control manual in effect somewhere in 1973, '75, or before Phase 2 initiation phase. Is that a fairly -- can you give me an idea of the size of the document?

MR. REEDY: The size didn't change that much. It's approximately an inch or half inch. It's in a binder. I say a one-inch binder.

MR. VOLLMER: And they were intended to cover all of the QA program for design, procurement, construction and so on and so forth?

MR. REEDY: Yes.

MR. VOLLMER: That that was the basic QA manual?

MR. REEDY: It was the basic QA manual.

MR. VOLLMER: So at that time you are saying that particular manual did not have any document control or correspondence design --

MR. REEDY: Yeah. It was to be addressed in a procedure. The procedure was numbered but it wasn't published until after that time frame.

MR. VOLLMER: Thank you.

MR. BISHOP: Roger, could I ask you a question also? Again, trying to put a boundary around what this means. When you say there was no document control for design documents, are you also including in that design drawings?

MR. REEDY: It was specifically with regard to design documents that we had the design input, design output. It wasn't referring to the drawings. There is an elaborate design control system for the drawings.

MR. HAASS: Document control?

MR. REEDY: Yes.

MR. BISHOP: Are there other documents that you are aware of that fall into the category of the drawings?

MR. REEDY: During the phase we are talking about, no. There was a -- there was a control system -- computerized control system for the drawings, but I didn't see that for the other types

of design --

MR. BISHOP: And were these input or output drawings with reference to the design process?

MR. REEDY: They were output drawings. These were the drawings for the support for piping.

MR. HAASS: When you say other documents, you are referring to -- to analytical type? Specifications?

MR. REEDY: Design input and design output.

MR. HAASS: But the drawings themselves -- you are separating drawings out. You are saying there was a control system for drawings.

MR. REEDY: For the drawings that were used for the fabrication. Yeah.

MR. VOLLMER: Go to 4.

MR. REEDY: 4.

MR. VOLLMER: No controlled procedures for design controls on interface -- I guess that is sort of like the previous findings only a different activity.

MR. REEDY: Yes.

MR. VOLLMER: Is your implication there that there were noncontrolled procedures or should I take no significance in the use of "controlled" in there?

MR. REEDY: Well, the real significant word is "controlled".

MR. VOLLMER: Okay. That was my question. So there

were noncontrolled procedures --

MR. REEDY: Yes.

MR. VOLLMER: -- in effect? And that's what you said in the beginning?

MR. REEDY: Yes. Yes.

MR. VOLLMER: And these were given -- I think the word you used, the design group chief or something like that.

MR. REEDY: You had members from the chiefs of the main branches, civil, electrical, mechanical. You had some of the managers or submanagers. Supervisors would all produce documents as to how controls were to be established and performed, but it wasn't a controlled thing where everything is consistent among the groups. Each one had its own interpretation as to how he wanted to control the work in his group, which is a natural management process.

MR. VOLLMER: Did you read any of these? I assumed you looked at them for content.

MR. REEDY: We certainly didn't look at them all; but, yes, we did read them.

MR. VOLLMER: Were they -- was the thrust of them -- I don't want to break out QA as nontechnical or unimportant. Were they design oriented or did they appear to have quality assurance procedures in mind? This is the way we like to do our business in this particular design shop.

MR. REEDY: It was more along the lines of how we would

conduct business. Not details of how you perform designs. Design procedures are not how you perform design. It's how you have the control of what you do.

MR. HAASS: In your review I want to understand how you distinguish between programatic deficiencies and implementation deficiencies. In that case I assume that each of the design groups establish their procedures and somebody will say that is an implementation.

Now, somebody could say that is a programatic requirement also. How are you saying this here?

MR. REEDY: What I'm saying is that from the start you are saying you had PRE 9 and 10 which addressed these subjects as this will be the procedure that we will use to do this, but they weren't published until a later time frame. In the interim each manager or chief had his own method of control, but it wasn't uniform. We had to take the strict interpretation. Otherwise we would have arguments as to whether or not it was adequate, et cetera.

MR. HAASS: So as far as the manual was concerned, it did not contain procedures?

MR. REEDY: In that time frame.

MR. HAASS: So that is a black and white item?

MR. REEDY: Yes.

MR. BISHOP: Could you define for us what your interpretation of "controlled" means?

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MR. REEDY: Well, my definition of "controlled" means that there is a method of establishing that something was done, that it was given to people. People received it and knew how to use it and acknowledged it and that any revision would be able to get back to the same people who received the first one.

MR. BISHOP: Is it necessary that it be a companywide document?

MR. REEDY: Not in my mind. You can have individual controlled systems for small groups.

MR. VOLLMER: Okay. Item 5. Appears to be another one of your black and white categories, Walt. Shall we skip on to 6? Any questions on 5?

MR. MIRAGLIA: Well, again I guess the scope of the findings programatic are for the seismic design-related activities pre-1978.

MR. REEDY: That's correct.

MR. HERBERT: Pre-June, '78.

MR. MIRAGLIA: Yes. Thank you.

(Laughter)

MR. REEDY: We have to have a controlled discussion here.

(Laughter)

MR. VOLLMER: Using the 1st or the 30th?

MR. BISHOP: I notice in your reports you did go further than just dropping it at that point. If you found there

was no requirment, you still made an effort to determine whether the contractor chose to apply QA --

MR. REEDY: Yeah. For example, on that comment, EDS -- by the way they managed their work decided we are going to use this program. Maybe you didn't tell us to use it, but we are going to use it.

So we looked at each to see did you do a similar type thing.

(Pause)

MR. VOLLMER: Item 6. Could you expand on that for us, Roger?

MR. REEDY: Yeah. I mentioned a little earlier if the QA group went into the design group and found problems, they would mark that as an audit finding. The next action to verify what had been done, corrective action, was really taken by the next audit; and if we were still there, it was another finding; and the next time they came in, it would be another finding.

MR. MIRAGLIA: What would the QA group use as its criteria to conduct an audit; For example, if it was looking at indoctrination training would not be necessarily a finding that they would make since it was not in the manual. Would they use the manual?

MR. REEDY: I am not sure that is a question that I should be answering because you are really asking -- you know -- what was their thought process for determining how they would conduct an audit? And I didn't get into that thought process.

MR. MIRAGLIA: Let me rephrase the question. What kind of findings would be in these kind of audits?

MR. REEDY: They would be procedural-type comments. They weren't findings having to do with design, saying they used the wrong program or your assumptions were wrong or anything like that. They would be a programmatic-type thing. Just pull one out of the air. Certainly I have nothing specific to relate it to. Right now we could go back and report, but a typical type thing might be that, hey, we found two copies of the same drawing -- design drawing with different -- same revision with different

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configurations on them. That could be an audit finding.

MR. VOLLMER: Okay. Did the audit reports -- were these sent then to the people that were audited and to management above them? Do you recall?

MR. HERBERT: They were sent to the people audited, but we couldn't track the -- where it went through the rest of the management chain.

(Pause.)

MR. VOLLMER: You say in Item 6 corrective action procedures were not addressed. What do you mean they were not addressed?

MR. REEDY: Corrective action has been interpreted in the beginning as how you fixed equipment. In other words, we found a crack in an item. What are we going to do and what is going to prevent that from occurring again? Or we found that you didn't perform a nondestructive examination. Corrective action as an activity for design control have not really been looked at by many organizations. If you found a problem in design, was it systematic problem and what kind of activity are we going to take to correct that? I'm saying that a corrective-action approach to a design problem was not in the program.

MR. VOLLMER: I see.

MR. HAASS: That is again a black and white item?

MR. REEDY: It's a black and white item as far as I'm concerned with regard to design, but many QA auditors will tell you

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corrective action was meant for equipment, not for design activity. I have heard that statement many times.

MR. HAASS: Well, Appendix B doesn't distinguish it.

MR. REEDY: I am not going to defend that interpretation. I am just saying that I didn't interpret it. I interpreted that corrective action was required for design.

MR. HAASS: And 6 is a mixture of corrective action and it sounds to me like they performed the audit function correctly, but the corrective action was apparently not --

MR. REEDY: Yeah. They would identify what the problem was and the follow-up on that would be another audit.

MR. HAASS: Yes.

MR. REEDY: And I am not saying that is not a good way of doing it, but it can be time consuming, and that was my concern in addressing it in that manner.

MR. HAASS: Criteria 16 calls for prompt identification and correction.

MR. REEDY: Um-hum.

MR. HAASS: I would say it's a black and white item.

MR. VOLLMER: Okay. It seems as if we have covered adequately Findings 7 and 8.

MR. HOCH: Dick, could I use Finding 7 as an example of something because I'm a little concerned about Walt's statements about black and white items, and the reason I would like to do this is because this whole series of findings -- I think they are

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all called programmatic deficiencies; and I am bothered again, Walt, as I think you are about the distinction between programmatic and implementation, and I would like to use Finding 7 as an example of the difficulty there with respect to indoctrination and training. Let me read you if I could a very short item from Appendix B to 1970 quality assurance manual, Revision 0. Getting back to 1970 with respect to training -- indoctrination and training -- and this is from the manual. Personnel involved in the quality assurance program will be trained and qualify in their respective fields. Personnel performing nondestructive examinations must meet the qualification requirements of appropriate codes and standards. Proficiencies will be monitored and training activity taken when necessary.

And that's the end of that quotation. Let me follow with a statement about what I understand the philosophy to have been during this time period with respect to the quality assurance manual. In general the statement had things in that kind of a general way as a requirement and was never really intended to contain detailed procedures for how you did the -- how you implemented this. That is true of the program in the present day. Those procedures are contained elsewhere in an individual department's quality control manual, for instance.

I guess to the extent then that Mr. Reedy was unable to find documentation that this detailed training was done in specific engineering departments or in the design process, I guess

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I tend to call that an implementation rather than a programmatic deficiency.

MR. HAASS: There may be a problem here because Item 7 under programmatic says indoctrination and training were not addressed in the QA manual or procedures, and you are reading from it in which it was addressed.

MR. HOCH: Okay.

MR. REEDY: Again, I don't want to get into the details of this. Our interpretation of that was very specific, so we were relating this to design activity.

MR. VOLLMER: Design. Could we take a break till eleven o'clock? I would like to try to get things wrapped up by one if we possibly could.

(A recess was taken at 10:46 a.m.)

MR. VOLLER: Okay. Back on the record.

I'd like to -- to the extent that we have -- discuss for clarification, go through the implementation deficiencies. Then to the extent again that we would have to, go over the conclusion areas. I think I'm getting a better understanding of what was done. Secondly, the scope and following that, I will turn it over to you, John, to make any statements you would like and to Dick Hubbard.

I don't expect that we will be making any particular conclusions at the end of the meeting. As I said before, we are trying to understand what was done and report back to management

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as to what we see as the impact of this report on the Phase 1 program. I'm going to have to leave for about five minutes, and I'm going to ask Walt Haass to lead off on the discussion of implementation deficiencies.

Walt?

MR. HAASS: Okay. Before we do that I don't think we clarified yet on Item 7 of programmatic deficiencies. What was your view of that? The question was what was your view regarding the statement that Mr. Hoch raised on the fact that the manual contained some discussion or some discussion of training?

MR. REEDY: My response to that is that this is a design review, so you heard the statement about training of NDE personnel on QA, and I was looking for the same thing with regard to design personnel.

MR. HAASS: Your interpretation was that the statement in the manual covered QA people and NDE people?

MR. BISHOP: To review that further, the first sentence I believe you said -- well, John, could you read the first sentence?

MR. HOCH: This again is from the 1970 quality assurance manual, Appendix B. There are two. Personnel involved in the quality assurance program will be trained and qualified in their respective fields.

MR. BISHOP: Did you interpret that to mean narrowly QA people?

MR. REEDY: No. But this again is the interpretation as

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to whether that might be our -- our comment might be a programmatic one or an implementation one, and I felt that it was programmatic in that is there is some activity to show that you are going to train people that you can then audit to to see if it was done? So although it did address it with regard to it will be done, that to me is similar to you putting a copy of the eighteen criteria in QA book and say you address everything in the eighteen criteria. That would not mean that you had a good QA program.

MR. BISHOP: Thank you.

MR. HAASS: I see out of the programmatic deficiencies, I would identify 3 through 8 as contrary to what Appendix B said.

MR. CLOUD: I am sorry. I didn't hear you. Say that again.

MR. HAASS: Of the programmatic deficiencies on 4-89, Items 3 through 8 I would identify as being contrary to Appendix B.

MR. REEDY: I am not sure I understand how you are saying that. Do you mean that these are -- you are trying to identify these are legitimate findings?

MR. HAASS: If I understand your review, you are saying that Appendix B called for those requirements, and you did not find them in the manual.

MR. REEDY: Yeah. That's what I said.

MR. HAASS: Okay. I would suggest we move on to the implementation section. Let's talk about those.

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Roger, would you like to address the first one?

MR. REEDY: The first one has to do with the criteria 1 which says that management shall review a program as far as effectiveness. In other words, are you getting the results out of the program that you should be getting? And we could not find that addressed.

Now, there was QA or review on the part of management of audits. There was certainly review of program changes, so there was a management involvement in that, but we were trying to hone in specifically on the activity to verify the effectiveness of the program, and to me a review of audits doesn't tell you how effective the auditors are doing their work. It tells you what they found but not were they really effective auditors, and that is the intent of my statement.

MR. BISHOP: What do you expect to see to have a positive finding on that type?

MR. REEDY: I would expect that someone would go in on a periodic basis to see if they are arriving at similar conclusions to what the auditors would be finding, the internal PG&E auditors, finding out if they are effective. In other words, do you concur with the type of findings that they are coming up with?

MR. BISHOP: The third party?

MR. REEDY: Third party, accompanying people, but just doing the same function again.

MR. BISHOP: How do you review the -- I guess it was 1975 -

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I believe it was an ASME audit you made reference to in light of this finding.

MR. REEDY: Well, the 1975 audit finding was something that was sent to us. That was by Energy, Incorporated; and that was sent to us after the exit interview. I received a phone call saying that we have some documentation of a management audit of a sort, and what it applied to was in 1975 we had asked Energy, Incorporated, to come and evaluate what it would take for us to get an ASME certificate for performing code activities; so Energy, Incorporated, came in and did this management audit to advise management of what steps might be necessary to get an ASME code stamp; so that document was sent to us as being applicable to show that there was a management audit. My problem with why that didn't change my finding was that it was not an audit finding -- it was an audit finding that the most we could verify went to one person. It was not widely distributed, and it was difficult for us to verify that any positive action with regard to the findings had been accomplished because of that.

Now, I'm not saying nothing was accomplished -- because there was change in management people with regard to the program. There were modifications to the program, but again saying that this was part of that, you couldn't document it.

MR. HERBERT: I would like to elaborate on that a little bit. There were maybe two -- maybe not several -- PG&E review boards, if you will. Early on in our program they were identified

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to us as being those types of organizations that would do the management QA review, and in trying to verify that we did in fact review all the minutes of the meetings that were made available to us, and it was a management QA review, but their subject seemed to be rather limited to the operational aspects of Humble and certain of the upcoming operational aspects of Diablo Canyon; so on that basis we could not accept that as evidence that the design and the construction activities were bein subjected to the same level of management review.

MR. HAASS: We found no -- we found no documents which would indicate that the requirement for management review was indeed implemented for design construction -- for the seismic area.

MR. REEDY: We didn't find any procedures that wasn't addressed in the manual in the way that we felt that it should be addressed for the design activities that were carried on.

MR. BUCKLEY: One person said design and do you say -- and another said design and construction.

MR. REEDY: We were talking about design people. We were getting design documents and weren't in the files of the whole organization. We were only talking design, in that aspect.

MR. MIRAGLIA: Specific finding does indicate the words they did not review the QA program for the design and the construction of Diablo Canyon.

MR. REEDY: But again we were in the design phase. We

were with the design people.

MR. HAASS: Was there implementation deficiencies tied in with any use of stricter QA requirements than one would read in Appendix B?

MR. REEDY: I think it would be easy for people going back to 1970 to say our management involvement in assessing our program and having discussions with QA managers and looking at audit reports and talking to people was adequate to fulfill that requirement in 1970. That type of activity in my mind was the type of activity that was carried on in 1970. It was certainly carried on there, but now when you are looking for how is that documented as to what occurred? Where are the minutes? They weren't there. Again this is a very strict interpretation of today's requirement. What you would look for today. You would look for some kind of minutes of the meeting of what occurred. So I'm not saying management was not involved. That is not the intent of that statement.

MR. HAASS: Well, your bullets under Item 1 clearly referred to documentation.

MR. REEDY: That's correct.

MR. HAASS: And it would be useful to us if we had some other item in there that says discussions with people or however you drew this conclusion -- that you said how this conclusion was drawn, but we don't find documents.

MR. REEDY: I have a problem in doing that. That is not

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auditable. You may want to get into more detail. As I said at the beginning, when we accepted the job of looking at this 10 CFR 50, the only common interpretation we can all agree on is today's interpretation. We cannot go back to last year's interpretation, so we were looking for any statement that we say in our report can be verified. If one wants to check any statement in there, we will give you the evidence of it; and if we say we had a conference with someone and they assured us that is not really acceptable in today's world -- based on experience -- yeah, we did this, but maybe that was limited to his little group. How do you make an assessment of a verbal, "Yeah, we did that"?

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MR. CLOUD: If I could -- or attempt to add something.

MR. NORTON: Speak up, Bob.

MR. CLOUD: Yeah. In order to possibly understand the reason some of these things were written in the way they were written and particularly why the kinds of things that you just asked for, Walt, were omitted, it helps to keep in mind the overall framework and atmosphere of this review at the Diablo Canyon. Circumstances have made it necessary if not imperative that things be done and things be said only that -- you know -- that are really strictly traceable and verifiable and opinions have -- and even verbal findings have been found to be not only without value in the past but in fact even detrimental because they are -- and have been subject to -- have been subject to completely wrong interpretations, and so it might be worthwhile to keep that -- the whole business of independence, et cetera, in mind when thinking -- you know -- when asking these kind of questions.

MR. HAASS: I appreciate what you're saying. Perhaps what would help is -- is the fact that you do have this information that you have not conveyed because you're trying to document items that you can audit, that you can go back to and repeat the same audit and come up with the same conclusions.

On the other hand we're faced with a decision as to where do we go from here? And if you have additional information, maybe you have to indicate --

MR. HOCH: Could we make a suggestion? I think we have the same feeling you have. That while these things -- you may not be able to give them the same kind of weight that you give to a very detailed paper trail, you still have some relevance.

MR. HAASS: Yes.

MR. HOCH: And it seems -- seems it would be valuable we think if there was a way that -- to add an observation or something on the report, to make it clear that you were talking about things that weren't necessarily directly auditable but that did perhaps affect the conclusions.

MR. BISHOP: Let me ask --

MR. COOPER: Can I respond once more to this one? Briefly last week I tried to make the point that in performing the independent design verification program we had to be strict interpreters of the written word, and this was not our role to make judgments, and someone asked the question, well, what if you find something that meets the written word but is really dangercus? Don't you feel an obligation to respond to that? I suggest, we have an obligation to respond to that as individuals but not as independent design verification program.

Now, I can fully understand why you would desire to receive the maximum possible benefit from what Roger has done. Not just what he has written down in the strict interpretation of the words. I would point out that some of that judgment is available to the independent program in their decision as to what

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to do as a result of the words "Roger has found" and specifically for his findings, open item reports will be opened and there will be further investigations. Not was the QA okay but with respect to does the design work satisfy the FSAR requirements? So that some of that kind of interpretation is, of course, essential within the independent design verification program also.

Now, there is -- I think there is two ways to handle it. One is to ask Reedy's operation to write a separate report from this audit report, an interpretive report or something like that as part of the independent program.

Another possibility is to ask that they do something like this, something very clearly identifiable as being separate from the specific mission of the independent program; and I don't care which way that one goes, but I would suggest that it might be premature to write such reports simply based on the Phase 1 cut-off date that Roger has been working to, and if there is interest in such interpretation of the meaning of what they have seen, then perhaps that ought to wait until after the entire job is done, Phase 1 plus Phase 2, with respect to these QA.

MR. CLOUD: Our thoughts were running in the same vein. I was going to suggest an additional report that it could -- that it could receive these impressions also.

MR. REEDY: As you know, we were trying to absolutely maintain this independence and keep more to a stream of

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independence. I think it is very appropriate for PG&E to comment in detail on the report and on the basis of those comments look for justification behind the comments which will lead to these interpretations and fully -- more fully understand the effectiveness of the program as implemented at that time but to do such a thing without such a meeting here to explain where we are at I think would have been a disaster from the beginning because it would have been looked at in different light than we are trying to bring it forward today.

MR. COOPER: That is one of the reasons why I would like to wait to do the interpretive report until the Phase 2 QA reviews are done so that those are out and published and available and at the time then the independent program QA people and the PG&E people and the other related subcontractors, QA people get together and try to help you with these interpretive-type reports.

MR. VOLLMER: Well, I think it's clear that interpretive type of input is something that is needed to make a decision ultimately because the significance of things in black and white needs to be interpreted by somebody, and different people are going to interpret it in different ways.

I might say that I felt the commission order -- and again it depends on how you read it -- sort of calls for something like that because in the commission order where we say comparison of these procedures and controls with the related

criteria of Appendix 10 CFR, Part 50, and identification of any deficiencies or weaknesses in the quality assurance procedures and the controls of the contractor and PG&E. It seems to me that I would interpret the weaknesses to be somewhat of a judgmental aspect, and I think what you are saying here, you are trying to play a pretty careful role and it either is or isn't, and using the guidance that we have already established, the criteria which you have already established as your base for that judgment.

MR. REEDY: That is correct. I had interpreted weaknesses more of a generic thing to be pointed out. Not as an interpretive thing to be pointed out.

MR. VOLLMER: I think that is a fair reading either way.

MR. REEDY: Yeah. I think I had known about that.

MR. CLOUD: May I add something?

MR. VOLLMER: Yes, Bob.

MR. CLOUD: I would like to add something at this time based on two things. First, you said that you would -- it would be helpful to you to make decisions -- and the key word was "decisions" and the second thing was that you said you were leaving the meeting.

(Laughter)

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MR. CLOUD: But with respect to decisions and implications of this report, I think -- I think it's very important to recognize that our part of the verification program was formulated and designed in such a way that it would not in any way rely on the QA program or practice nor would it rely on any other of the paper trail; and when we are finished with our work, the plant will have been verified for its seismic adequacy whether or not there was any QA program or not; and I think it's -- I think the -- the -- that Roger's report and it's one of its main values is that it rationalizes or explains why some of the findings are turning up in the independent calculations that in fact are turning up.

It's a way to understand why the things are turning out the way they are.

I would further say that in our recommendations for any additional verification and also in the final report we will fully factor in any deficiencies or weaknesses in the QA program, so although you may have a different viewpoint, it's not obvious to me at this time that any direct action is required because of this finding. You see, I think one thing we can all agree on, the presence of a good QA program and good QA program will improve the probability of obtaining a good design, and a weak QA program, weak QA practices, will lead to higher -- higher probabilities of bad design. It's just a probabilistic thing.

QA by itself in no way, manner, shape, or form insures

sound design; and in fact, some of the best QA practices that Roger found, we found errors in the calculations. So that -- okay. And so that comes back to the final thing, and so that I think Roger has in his report -- has shown that there have been deficiencies in the overall QA atmosphere, and I think that the main value of that is to understand that we would expect perhaps that there would be a higher probability that there would be deficiencies in design or discrepancies in design and in fact quite a number turning up, but I hope -- and I believe that we will before we are done have found them all -- whether or not there was any QA.

Thank you.

MR. VOLLMER: Well, I think that I for one would agree with much of what you have said in terms of -- of what QA does it to more formalize and try to assure that design errors are caught in the process rather than after the fact.

I am curious and have to question whether anybody has thought about the deficiencies that Roger has found are corrolatable to the errors that you have found or is this something that you intend on doing or are doing?

MR. CLOUD: Even though we have -- we have made no attempt in the last two weeks to establish a corrolation, I would say right off -- right off the top that the major finding, which was inadequate control of the design documentation, is immediately corrolatable with our major finding, which was the fact that the

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design spectra that we find several discrepancies in the application of the design specta which, of course, is the design documentation that wasn't controlled; and I'm sure that when we go through it more systematically, looking at our open items and his findings, that we will find additional corrolations.

MR. BISHOP: Doctor Cooper, if I understood the program as you explained it to us last week, Mr. Reedy's findings will be documented or have been documented on format-type documents that will then be submitted to Pacific Gas & Electric for them to make comments on and then will come back for further review by our organization. Is that correct?

MR. COOPER: That would not be correct in the case of Mr. Reedy's reports. In the case of Mr. Reedy's reports, they are, of course, submitted to the commission and to PG&E and to the other participants in the independent program for our use in formulating the appropriate open items for further engineering investigation, but there was no intent of going through the loop on the QA aspects as there was on the technical aspects, whereas if we find an open item technically and proceed to generate a Class A error as our conclusion on that matter, that that Class A error would go to PG&E for whatever corrective action they had and then would come back to the independent program for verification.

We are closing the loop on the technical matters. We have no intent of closing the loop on the QA matters.

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MR. BISHOP: Dick, I think somehow we need to make sure that PG&E comments -- where they have supplementary information or something that Mr. Reedy wasn't available -- some mechanism has to be provided to get that to our groups so that you can consider that in your bottom line conclusions.

MR. VOLLMER: Well --

MR. COOPER: Well, I think PG&E has to do what they have to do with anything they turn out of our program; and that's properly addressed to them.

Now, if someone wants to expand our program to go further with these interpretive type of reports and so forth and if they will agree that that can be held off until the Phase 2 aspect is complete which is -- I also mentioned last week I would like to get started on very soon and I expect to have a letter in to you folks next week on that.

After the QA reviews are complete, if there is a desire to go and try to reconcile the viewpoints of the independent program and of PG&E and to come out with some sort of an interpretive report, I think that would be a very useful thing to do; but it is not presently part of the program.

MR. MIRAGLIA: I think the commission's order, Item C, if the commission's order says PG&E's conclusion on the effectiveness of this design verification program in assuring the adequacy of the facility design. It would appear to me that the commission expected some sort of overall evaluation of the

program that was conducted and that would consider all the findings that were identified.

MR. VOLLMER: Well, I think -- getting back to the interpretive report, I think -- at least it's my feeling that we could not move off of Phase 1 as it's currently constituted -- that is fuel loading and low power operation -- without being able to make a finding that what Phase 1 has shown us would not indicate implications of errors in the facility design that might be uncovered in Phase 2.

What I'm trying to say is that unless we could make a pretty good finding of QA in overall facility design, I don't think that we could really close out Phase 1, so if we put out interpretive reports until Phase 2, we would certainly be stuck in the Phase 1/Phase 2 dichotomy.

MR. HOCH: May I make a suggestion there? And again I guess -- where we have a difference with Doctor Cooper on that as well. The interpretive report would seem to be most valuable if it's done promptly since it is including information that is the results of interviews and verbal information, and it would seem almost essential that it's done promptly while all this is still -- is still fresh in the minds of the auditors and the people that were involved, and in addition what was said about our comments, we certainly do intend to provide our comments about the report, and those comments contain or will contain many of the items we have been discussing here.

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Not only references to documents and procedures but practices that were in place that weren't necessarily documented on hard paper.

Any suggestion you have as to the mechanism of getting those comments would certainly be welcomed. Frankly, one of the reasons we had -- we suggested a delay in the meeting and one of the difficulties we have had has been more with the mechanism, the difficulty of what the proper mechanism was than with the comments themselves.

MR. BISHOP: Doctor Cooper, on your slide you presented last week it indicates the QA audit and review reports will result in findings or observations, and you are telling us now that that is not the case?

MR. COOPER: No. Those findings on that diagram which, by the way, you will find to have been simplified and supplemented and changed when you get the program; but that box labeled findings then goes down to a box labeled open items, which is what I was referring to previously.

I think, Dick, with respect to your concern of closing out the Phase 1 program in a timely manner that my recommendation to proceed with the Phase 2 QA reviews of those organizations reviewed during Phase 1 and getting started on that immediately almost would assure that that loop would be closed in a manner which would permit you to consider those results when you are considering the termination of the Phase 1 aspect.

MR. VOLLMER: I think I agree that we do need to get started on that as quickly as possible. If you take the strict Phase 1/Phase 2 separation that we at one time did maintain, I think I indicated I would agree with Bob Cloud that if the QA program deficiencies indicate a higher probability of design problems, then one could not proceed in Phase 1 and go on to Phase 2 as separate action unless you had a good -- a good understanding of the significance of the QA report done on Phase 1.

I think if we go on to Phase 2 and get substantial amount of experience and information from Phase 2 under our belt before Phase 1 decision would be called for, then I agree with you that it would be a much better process.

MR. COOPER: That's what I would like to do.

MR. VOLLMER: Yes. Could we proceed?

MR. BISHOP: I didn't want to let loose of this one yet until I fully understand it.

Again, your chart -- you stated your findings then result in an open-item report which is a document that according to your presentation then goes to -- splits up and goes to further study or action to PG&E for review and again you are telling me that these will not be documented in that manner?

MR. COOPER: No. The open item is -- the open-item report, of course, goes to PG&E and appears in the semimonthly reports for everyone's information, and PG&E can do anything they want to with that. We have eliminated that decision point down

at the bottom of that particular chart you're looking at for a reason that is not necessary to go into here today.

PG&E will do what they can do with that open-item report. The independent program will complete their study on that open item and categorize it either as a closed item or as a deviation or as an error of one of several classes or as an open item that the independent program cannot resolve and it's transferred to PG&E for resolution; and on the items that do go to PG&E for resolution, we are saying in the new charts much more clearly than we did in that particular one that of those items that go to PG&E for resolution, that if it is a Class A or a Class B error or if it is a Class C or Class D error of deviation in which physical modifications result, then it has to come back into the independent program for verification so the loop still gets closed on the consequences of the QA finding if it results in some significant consequence; but it's not a resolution in the sense of doing something about a QA program because, after all, the QA program that exists today I am certain that is very different than that which existed in May of 1978; but rather it's a closing of the loop on the significance of that QA finding to the equipment and the safety of the unit.

MR. BISHOP: I understand what you are going to do with these findings is determine whether you need to increase your sample or change your sample in some fashion; and to do that, your conclusions obviously should be based on factual data.

PG&E has said that there are some cases where they have factual data that wasn't provided to your auditor for one reason or another. How do we intend to get that factual data to you before you make your decision?

MR. COOPER: I believe that the appropriate thing here would be for us to determine what open item we would create as a result of the finding and then when that open item goes go PG&E and when we request information from PG&E in an attempt to close out -- to resolve that open item, that it's at that point that it would be appropriate for PG&E to point out to us, Hey, you are resolving an open item that had to do with such and such a finding. You have asked us for A, B, and C. We are also going to give you D because we think it will help solve the problem.

(Pause)

MR. HAASS: Okay. Bob -- Roger, why don't we proceed on the implementation deficiencies. Item 2.

MR. REEDY: Okay. Item 2 goes back to the discussion that we have had earlier, Walt, with regard to corrective action in audits and the documents there, some of the differences that we have had and some of the things with regard to timeliness in finding the same audit finding in several audits. Those are consecutive audits.

MR. HAASS: As I read what you have here, you repeat your programatic deficiencies where you have found no corrective action by the engineering groups. Only in the context of audits.

MR. REEDY: Yeah. The way you phrase that I am having problems with it, Walt. I am not saying they didn't take corrective action. I am saying there was no formalized corrective action document that I am used to seeing where, yes, we have received the finding. We noted -- we are going to correct it. Here is what we have done, and then come back at a later time in a further audit to see that it was done. That action of, yeah, we have your thing, we are going to do something, et cetera. That wasn't there. That was the missing.

MR. HAASS: And it's lack of formal documentation?

MR. REEDY: Correct.

MR. HAASS: Can you say again that corrective action is the other -- in other investigations that you found that corrective action was performed but you just couldn't find documents?

MR. REEDY: We have found cases where a finding would show up on an audit and the next audit there wasn't an item anywhere, but we have found cases where an item came up and it was on that audit and the following audit.

MR. VOLLMER: So it was a presumption -- it could be presumed either that it was closed out or wasn't looked at on the second audit then.

MR. REEDY: Yes.

MR. VOLLMER: Is that how it would appear?

MR. REEDY: Yes.

MR. VOLLMER: There is no formal way of checking it out.

MR. REEDY: We had no formal way of verifying it. Please don't get the impression that corrective actions were not taken. They were taken.

MR. HAASS: Okay. Can we move on to 3?

MR. REEDY: Item 3 is one that we have addressed quite a few times, and the design consultants were not requested to have a formalized QA program.

MR. SCHIERLING: Roger, the commission order calls out to look at the interfaces between PG&E and th subcontractors. Can you elaborate a little bit in what you did in that regard in looking at these interfaces?

MR. REEDY: Yes. Let me take an example. We found some problems in EES, and we were trying to see if that same problem occurred back at PG&E. We found a problem with a support, for example; and so we took that support and traced it through PG&E to find out what the effectiveness was in tracing that back; so when we had a specific problem in a design area, we would trace it back as far as we could.

Now, Paul will comment on some of the things that he had as a follow-through on the work that either Wyle or Anco did.

MR. HERBERT: I think I described earlier in our discussions today that when it was determined that the consulting firms were not directly under a QA program and in fact were not

performing under a formal QA program, as a part of our audit during the PG&E portion I tried to verify through conversations and through engineering records how each of these interfaces were addressed.

For instance, as a part -- there is a table attached to the Wyle PG&E interface that shows that there was initial test plan back and forth. We could check through correspondence files that certain of these documents were reviewed, et cetera, et cetera; but not all in all in cases, so I wanted to see what information did PG&E give to this consultant firm and how did they use it and what did they send back to PG&E? How did PG&E control that and what did PG&E do next?

So we use that as a method to verify what was actually done. Does that answer your question, Hans?

MR. SCHIERLING: Yes. Thank you.

MR. HERBERT: We found that it was done. It was not a hundred percent documented.

(Pause)

MR. HAASS: Item 3 now goes to -- saying you found no formal documentation for requiring QA -- QA programs for subcontractors, and then you follow through on your reports where you indeed looked at subcontractors and you found various situations.

One subcontractor having a full program and implementing it despite not being told to do so, to the opposite

extreme where contractors had no QA program.

MR. REEDY: That's correct.

MR. HAASS: What can you say with regard to this question of interpretation?

MR. REEDY: What interpretation, Walt?

MR. HAASS: What can you add to the -- to the limitation deficiencies in this regard with regard to the subcontractors?

MR. COOPER: It did not require QA on the part of the subcontractors, and it wasn't followed through to see if it was indeed done.

MR. REEDY: I don't think there is any question that they were not asked to do it, and they didn't do it until they were asked to do it except in cases where people determined that is how they do business.

MR. HAASS: How about in the subcontractor's shop itself? Was there evidence that people were following QA practices even though there was no manual, no QA program?

MR. REEDY: Walt, no. The only way I can answer that is that these were firms that were following standards, good engineering practice -- however that is defined -- and they were handling this work for PG&E in the same manner that they would handle their work on other types of structures.

MR. CLOUD: May I add something there, Walt? One, I think, quite illustrative example is the subcontractor that did

the qualification of a lot of the electrical equipment on the shake table, and we looked at Roger's report very carefully there because we found an error in one of the items that were qualified in that way, and what were found is that when Reedy went to that company's shop, they checked a number of things, but one of the very important things that they checked is that -- that the company kept and maintained good calibration records of their testing machines, and they had a good program for calibrating their machines at regular intervals; so in our recommendation for additional verification, we came to the conclusion that the testing -- the basic testing was done okay; and we found that the root cause of the qualification there was the fact that they were given the wrong envelope under which to test.

MR. HAASS: I think that information is useful.

MR. HOCH: Why don't we make -- this is an example of -- that particular contractor is an example of some other types of subjective information that might be useful to your evaluation too. The fact that that particular contractor did in discussions I have had with the people confirm that they were doing the shake table testing of PG&E gear at this point in time in exactly the same manner as they were doing tests for other people in the industry. That there weren't two sets of practices being followed, so to the extent that addresses the interpretation at a point in time of Appendix B or what quality assurance means, that would

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seem to be an important factor, and that testing -- if I am not mistaken, included not only commercial industry testing but some testing for -- for some governmental agencies too.

MR. HERBERT: John, I would like to expand on that a little bit too. Two of the firms who did specific testing on equipment where we found holes in the documentation, we do know that PG&E had their responsible engineer in residence, so where a sign-off of approval may be lacking, the man was there. He worked over the procedure with that organization. I think that is a very important point to remember.

MR. HAASS: These are the kind of things that don't show up here.

MR. REEDY: That's correct.

MR. VOLLMER: Walt, could we try to get through in twenty minutes or so?

MR. HAASS: Yeah. It may be that -- there is only two left -- that we can say the same philosophy applies. That -- of course, your statements are rather clear, but that you are saying that there is other information that you haven't provided here because of your direction to provide only auditable type information.

MR. REEDY: That's correct.

MR. HAASS: Is that a fair statement?

MR. REEDY: Yes. Yes, it is.

MR. HAASS: I think with that -- unless you have

something to add at this point, there is probably no need to go through these individually. We are getting the same answer.

MR. REEDY: I think these discussions have been helpful to me to present a viewpoint that I feel would have been considered prejudiced if I had volunteered it; and if you would understand that, I think you would understand our report a little better.

MR. VOLLMER: Okay. Could we then go, John, to your PG&E's comments on this report?

MR. HOCH: I think if it's possible, Dick, we could say several things right now; but before we wrap up the meeting, I'm sure you are going to ask -- I am not trying to second-guess you, but I am sure you will ask Mr. Brown and Mr. Hubbard if they have comments.

MR. VOLLMER: Yes.

MR. HOCH: We would like to have the benefit of some of their comments before we -- before we summarize at the very end. Is that a reasonable approach? If so --

MR. VOLLMER: If they wish.

MR. BROWN: This isn't a court of law. We don't have any objection except if you don't mind, if John -- John, in the event you say something that goes beyond what we said, we get a chance to respond. We would appraciate that.

I got a half a dozen things to say, and Dick has some. All of mine are deep concerns and none of them are going to paint

a rosy picture on what we have seen today. Appendix B wouldn't be a regulation which is mandatory -- and to the extent that any of the comments made have been intended to be interpreted that the absence of compliance -- I may have said Appendix A -- that Appendix B isn't significant, that is absolutely contrary to the intent of the regulations. It's contrary to the quality assurance division of the NRC. That is contrary to the way in which the nuclear plants have been built, have been intended to be built.

So there is no collateral subjective interpretation or anything else that would take away from the categorical fact that quality assurance wouldn't apply. I think everyone should focus on that. We are going to stress that. To suggest in any way that malfunction doesn't constitute something important is to suggest that the fact that the drawings were reversed wasn't important, that the wrong weights were used wasn't important.

All these things are the product of a failure of quality assurance, the failure of one of the most fundamental requirements. There is no words to push it under the rug. It's a categorical finding. Very, very serious. We are seriously watching it.

Second thing is the findings of Mr. Reedy are absolutely clear, and to the extent in which they speak in plain English, they ought to be accepted for what they say, and he is to be

commended for sticking to the obligations of independence. Everyone quibbled over that, and there are all kinds of feelings, but the bottom line is independence is important. That is particularly important to the parties that represent the state -- I can't speak for the intervenor group, but from what they have written, it's very important to them too. I am sure you know.

The second concern we have is that there not be any requirement for subjective interpretation placed on Mr. Reedy or Teledyne or Doctor Cloud through an interplay with PG&E. We have no objection to PG&E filing comments, and John Hoch has I think even volunteered the need to do that. We have no objection at all to John and PG&E doing that. We just want that to be done in the open, and after the work product is completed by Doctor Cooper, Doctor Cloud, and Mr. Reedy in accordance with the mandate that I think they all feel and that we feel that there be an independent audit.

Next point. The Phase 1/Phase 2 dichotomy just has to be looked upon as something thoroughly invalid. It was created at a time in this proceeding that was much earlier and even for the sake or argument saying it was sound then, the truthful developments of the last four months and in large part from Doctor Cloud's work has shown that technically the Phase 1/ Phase 2 dichotomy holds no merit any longer -- even if it did before.

Next we know that there is no paper that exists to

substantiate the existence of quality assurance here, and that means there is only one alternative. That is to look at the plant, to look at the as-built facility, and to do a verification of that, an inspection of that; and that is what we believe ought to be done.

I believe you gentlemen referred to it as a walkout. I am not sure if that is literally the appropriate phrase, but we are talking about a physical inspection of what exists.

Next I think it asked too much for people to believe that the quality assurance breakdown at Diablo Canyon can be confined to the very narrow work that has already been looked at by Mr. Reedy and his organization pursuant to the original mandated. I think any reasonable person would be inclined to conclude that there was no QA for other areas too, and it would seem to me that the staff ought to be looking at that as a very large red flag and it ought to be looking in the QA and all the other appropriate areas, and at a very minimum requiring PG&E to make a showing that the QA was adequate and that there be appropriate remedial steps taken if there was no QA.

Finally, Dick, to us these are real problems. They are not problems that any of the words make go away. Therefore, the solutions have to be real solutions and not solutions with words, subjective argument by lawyers, or by technical people who are working in tandem with what Washington refers to as wordsmith. We want from our perspective technical people making

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technical presentations and technical conclusions, and I will let Dick say something that is technical rather than wordsmithing.

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MR. HUBBARD: I think the first thing is one we have gone over before, that in order to have a good QA program it's like having a good emergency plan. The real test is how can it be implemented? It's the how; and a number of people in the 1970's regurgitated the eighteen criteria and said they had a program but it didn't say how it was implemented and what we say here is in the '78-79 time. It still had not been implemented. Now, that is eight or nine years after Appendix B was published. In my experience both with the NRC and having ASME code audits was that by 1972 the industry in general and particularly the one I was associated in was being audited to see how they were implementing both the eighteen criteria and the ASME code, and so the conclusion I come up with is that PG&E was at least five years late in implementing and possibly longer in getting really the how of their program implemented; and, you know, a classic of that, you look at Criteria 7. It's about purchased materials and services, and here we are talking about services and there was nothing in the purchase document. It couldn't be clearer.

Mr. Reedy -- the second point, he looked at the PG&E program against regulations. Now, he didn't look at it against what is in the Rainbow Books in spite of the fact that I think we can go back and find correspondence PG&E said that yes, indeed, they had implemented a QA program that met the requirements of the Rainbow logs. He didn't look at the details of N45.2.11 related to design and the details of N45.2.13 related to purchasing, and

so I differ with him I guess in terms of did he look at the most stringent? I think the more stringent review would be look at the fact that PG&E through letters admitted that their activities over some point would be in accordance with the Rainbow Books and therefore issued ANSI standards, and they didn't implement that as late as 1978 and possibly later.

I wholeheartedly agree with Doctor Cooper that you have to look at the consequences, that if you don't have a program, then do you have good design and do you have good construction? And what we have found so far is a hundred and some discrepancies in design and construction, so it would seem to me we have had an indication that we don't have a program pretty clear. Six out of seven. And we also have an indication of over a hundred discrepancies, so I am led to say well, we have got to look further. We've got to look at construction and we have got to look at other design, and that is the position we took as early as October. When you don't have a controls or indication that you don't have those, then you go and see how it was implemented.

There was some discussion about timing, how some of these things occurred before 1970; and I think that has little relevance because we looked Blume activities as late as 1979. The re-evaluation of the re-evaluation was going on, and we still find a lack of quality program and errors being made at that time; so I think in truth most of the errors that have been found, if not all of them, occurred after 1970; so what program was in place

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prior to 1970 -- you know -- it's really not that key to the issue.

Then I guess I would wholeheartedly support Herb and have before that this Phase 1/Phase 2 dichotomy makes no sense. You need to look at design and construction in total and then make an interpretation based on what you have found the adequacy of the plant meeting the application.

I think those would be the major comments.

MR. VOLLMER: Thank you.

John?

MR. HOCH: I hate to hold everybody up for lunch, but if we -- could we take about five minutes? I would like to take a five-minute break and then come back.

MR. VOLLMER: Fine. I would like -- again I would like to wrap it up by one if I could.

MR. HOCH: Sure. We haven't anything very long, but we would like to take about five minutes and talk about it.

MR. VOLLMER: Let's make it ten and the staff will go talk too.

MR. HOCH: Okay. Thank you.

(The hearing recessed at 12:11 p.m.)

MR. VOLLMER: John?

MR. HOCH: Well, PG&E certainly believes that the meeting today was very helpful in providing clarification of the Reedy report, of the scope of the report, of the basis for findings. As we stated at the beginning of the meeting, we do have some residual

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concerns, some differences of opinion with the conclusions and findings in the report.

We have talked about a number of those today. We do think based on the report today that before the staff can reach a conclusion on the QA program adequacy and certainly before the independent verification program can decide what action is appropriate as a result of this audit, that the kinds of information we are talking about today that might better be addressed in an interpretive report really need to be provided. We would propose that within two weeks that we provide a formal submittal, submitted to the staff, of course, with distribution to all concerned. The submittal to contain our response to the Reedy report, our views, comments, our critcism, references to additional informa ion where that is appropriate; that this be provided and that within a reasonable period of time following -- and we would suggest something like thirty days from now -- that Mr. Reedy provide interpretive report as an adjunct or appendage or a supplement to his original report, that he provide that to the staff and to us for -- for whatever purpose it's useful, both to the staff and to the remainder of the independent program.

This would appear to us to be appropriate, certainly because of the long time span we've been looking at in the program and because I think it's -- it's evident from the discussion today that important considerations with respect to the meaning and the application of Part 50, Appendix B, are still very dependent on

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the changing interpretation of the changing standard that was required in order to meet that regulation.

If this weren't so, certainly the issuance of guidance documents, the Rainbow Books, the regulatory guides, all that material wouldn't be necessary if the regulation stood on its own without a need for interpretation.

So we thank you for the opportunity to meet with you and we think the meeting was indeed extremely helpful.

MR. VOLLMER: Okay. I guess -- yes.

MR. COOPER: I'd like to respond on a concern we would have with this proposal. First I think obviously as I said earlier, PG&E has to do what they have to do; and they are preparing a response-type report in two weeks, and the other period of time is strictly not a point of concern to the independent program. The point of concern though is this further supplement by Reedy. I dread one of these exchange of correspondence contests that can go back and forth. That's the only possibility that's open would be to do it on the basis of reading what -- what PG&E has there. It's a -- a response that I'd prefer to wait with and do in one shot. All I'm trying to do at the moment is express concern as to the practicality and usefulness of that four-week report -- that Reedy response in a period like four weeks.

Roger, do you want to say anything about this one? Your reaction to it?

MR. REEDY: Well, to receive written comments from PG&E

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is very appropriate, very useful in evaluation; but for our organization to prepare a report based on comments to me seems like a letter-writing contest, and I do have a concern of that. I think you have to do more than just see comments back and forth. It really takes discussion. It takes evaluation. It takes a number of interfacing together. You can't just do it on the basis of a written comment in my mind.

MR. BROWN: Dick, pardon me. We would have made these comments had we spoken first also. We think that the proposal shouldn't be followed for the very reasons identified by Doctor Cooper and Mr. Reedy. We think any interpretation ought to be done -- ought to follow both phases because it's an integrated conclusion. People are balancing things.

Finally in the interim it's highly appropriate for John and for PG&E to file their comments, but there should be no burden on Mr. Reedy's oganization to reply to that or defend itself or get into a situation of controversy over that matter. As far as we are concerned, it ought to end. He did his report. It's independent and let PG&E make its comments in any way John wanted to. Publicly. We appreciate his volunteering to put us on his list. We hope that continues, and in the event we get into an exchange of papers or discussions or anything else, I would want to make clear that we are asking it to be an integral part of it. We don't want to be left out. This is much to important an issue to be left to an exchange of papers.

MR. CLOUD: I think -- I wasn't in any of the discussions preceding this present one, so I don't know where everybody is coming from, but I believe that somehow that the discussion has gotten off the track because the suggestion of additional report from Reedy arose because members of the NRC staff said it would be helpful to them to have the totality of what Reedy had discovered, not just the hard edge that was documentable, and so it would seem reasonable to me in order to make some contribution the NRC staff's needs, that Roger Reedy could prepare the report requested by PG&E on the basis of their present knowledge plus any additional knowledge that they might acquire as a result of any comments from PG&E. Is that not so?

MR. COOPER: Yeah, but that isn't what was requested.

MR. FRIEND: I don't think you understood what was requested.

MR. HOCH: I think what Doctor Cloud just said is what we had in mind when we made the statement. I perhaps -- I perhaps misspoke in saying the report should be directed only at our comments, but I think we can provide in the form of comments some references to material, procedures, memos and so forth which Mr. Reedy may have already looked at but which could be very useful to use in such a report.

MR. VOLLMER: Well, if I may now, since the staff had a caucus and we have had an opportunity, we had a couple of comments. Just to give you our thoughts in these particular areas

that you have covered, John. We also find the meeting helpful because the report did not provide some of the insights that we have achieved through the meeting, so in that regard it was helpful. I think there are two other points that the staff felt was necessary to convey. We all agree that the -- the Appendix B criteria - their application and their interpretation as expanded and developed over the years perhaps, but we think that as we see it we find that the criteria used in this report were by and large quite reasonable and appropriate, and there are enough instances I think where direct application of the three most literal interpretation of Appendix B was found to be wanting in the QA program that was applied in this particular phase under review. To suggest that without embellishing it by looking at a lot of different standards and growth of appendix-type material over the years that we have a fairly responsive answer in the report.

We also discussed the interpretative report and our feeling is that we would find it very valuable for PG&E to set down the report and those things which they find to be incorrect or deficient in terms of not looking at the activities that were indeed constructed by PG&E during this time frame, but we also think that going through Phase 1 process that we discussed last week or the week before with Doctor Cooper and Teledyne and he indicated to us it is his intention of feeding these things through that process, will really develop the type of interpretation that we are looking for. That is, the findings will be looked at.

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They will be married in some way to the findings of the technical part of the design verification process under Doctor Cloud, and I think the bottom line, whatever the recommendations are Teledyne in terms of further expanding Phase 1 or finding that the design is adequate for the Phase 1 review or is not adequate for Phase 1 review will really be the interpretative process that we find acceptable.

I guess that summarizes the staff view.

MR. NORTON: Dick, are you saying then that the PG&E response document that John referred to is appropriate? That a supplement Reedy report by Reedy is not necessarily appropriate or is not necessary?

MR. VOLLMER: I would leave that to Teledyne. If they feel it's appropriate, that is fine. I don't think the staff feels it's appropriate.

MR. NORTON: Okay.

MR. MIRAGLIA: I think the staff is saying if you apply the process that was described by Doctor Cooper relative to findings and open items and errors that would provide the frame work to give the resolutions of all of the issues in that documented form.

MR. COOPER: And I feel that report that PG&E is putting together will help us in evaluating the open items that result as a consequence of the findings of the QA program and of the initial establishment of the program.

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MR. MIRAGLIA: Yes. Yes.

MR. BISHOP: If I could add one item to that, Doctor Cooper. In the order it gave five actions that were elements to be considered. First of those elements was a review of the QA procedures and controls, so that I am assuming in your final report you will dedicate one section to the QA procedures and the controls and therefore would want the benefit of any PG&E input to your QA findings.

MR. COOPER: Yes. That final report will have to reflect upon each of those five elements and actually two of the five are related to what Reedy has done here. The existence of the program and the implementation of the program and certainly the prime reference that we will be relying on in trying to prepare some sort of a brief statement -- I'm not sure how brief it is -- but a statement in the final report on QA will be Reedy's initial report, but it does give us an opportunity to also reference this report PG&E has spoken of and to reflect upon the consequences of that and the consequences of all our later findings and the implication on QA, and that is the place to wrap it up I think.

MR. VOLLMER: Okay. Well, thank you for coming. We are ten minutes early. We can all go look at the daffodils. I thank you.

(The hearing adjourned at 12:50 p.m.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

Nuclear Regulatory Commission

in the matter of: Diablo Canyon

Date of Proceeding: April 1, 1982

Docket Number: 50-275

Place of Proceeding: 7920 Norfolk Avenue, Room P-118
Bethesda, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Ronald Graham

Official Reporter (Typed)

Ronald Graham

Official Reporter (Signature)