

1
2 UNITED STATES OF AMERICA
3 NUCLEAR REGULATORY COMMISSION

4
5 INVESTIGATION OF
6 DIABLO CANYON UNITS 1 & 2
7 INTERVIEW OF DR. ROBERT L. CLOUD

8 Pacific Gas & Electric
9 Headquarters Offices
10 Law Department Conference
11 Room
12 77 Beale Street
13 San Francisco, California

14 Wednesday,
15 December 16, 1981

16 The above-entitled matter came on for hearing, pursuant
17 to notice, at 9:27 a.m.

18 APPEARANCES:

19 On behalf of the NRC Staff:

20 B. H. FAULKENBERRY
21 OWEN C. SHACKLETON, JR., Moderator
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ERRATA SHEET

Interview of R. L. Cloud, December 16, 1981

The following corrections should be made:

- ° Page 5, Line 1 - Change SCHACKLETON to SHACKLETON.
- ° Page 7, Line 17 - Change to honest to to be honest.
- ° Page 15, Line 9 - Change basiss to basis.
- ° Page 20, Line 2 - Change what to that.
- ° Page 32, Line 5 - Change pahses to phases.
- ° Page 32, Line 11 - Change Roca to Rocca.
- ° Page 36, Line 11 - Change Manianis to Man. tis.
- ° Page 41, Line 20 - Change one Dr. to one of Dr.
- ° Page 44, Line 13 - Change light to slight.
- ° Pages 10, 13, 14, 18, 21, 27, and 29 - Wherever McCracken appears, change to McCracken.

The above corrections have been identified by Owen C. Shackleton Jr., Bobby H. Faulkenberry, and Dr. R. L. Cloud.

P R O C E E D I N G S

9:27 a.m.

MR. SHACKLETON: On the record.

This is December 16, 1981. The time is 9:27 a.m.

This is an interview of Robert L. Cloud and it's taking place in Room 3101 of the corporate office headquarters of Pacific Gas and Electric in San Francisco, California.

The purpose of this interview of Dr. Cloud is part of the investigation being conducted by the U.S. Nuclear Regulatory Commission to develop the facts and happenings surrounding the present reverification program being conducted by Pacific Gas and Electric Company concerning the Diablo Canyon Nuclear Power Plant.

Present for this interview is Dr. Robert L. Cloud who is a consultant for Pacific Gas and Electric Company.

Representing the United States Nuclear Regulatory Commission, from Region Five is Mr. Bobby H. Faulkenberry, who is chief of reactor construction, projects branch and the moderator, Owen C. Shackleton, Jr., senior investigator.

Dr. Cloud, you have the privilege and right to have present personal counsel. Do you so desire to have anyone -- of counsel present?

DR. CLOUD: I don't think I need one.

1 MR. SHACKLETON: All right. That's your
2 privilege, sir.

3 Prior to the beginning of this interview, I
4 explained to Dr. Cloud that the interview would be conducted
5 under oath and that he had a right to refuse this and he
6 has agreed that he would accept an interview under oath.

7 So, at this time, Dr. Cloud, would you please
8 stand and raise your right hand?

9 Whereupon,

10 ROBERT L.CLOUD

11 was called as a witness and having been first duly sworn,
12 was examined and testified as follows:

13 MR. SHACKLETON: Thank you. Please be seated.

14 Some of the ground rules that I want to make
15 clear at this time, Dr. Cloud, is that we are requesting
16 that all interviewees not to discuss this testimony with
17 anyone else.

18 At this time, I would appreciate for the record
19 if you would please give your title of your company and
20 just briefly your present contractual relationship with
21 PG&E.

22 DR. CLOUD: The name of my company is Robert L.
23 Cloud Associates. We are, at the moment, working on the
24 reverification of the seismic design of the plant insofar
25 as it relates to seismic service-related contractors.

1 MR. SCHACKLETON: Thank you.

2 And the location of your company, Dr. Cloud?

3 DR. CLOUD: It's in Berkeley, California.

4 MR. SHACKLETON: Thank you, sir.

5 Bobby, would you like to proceed with the
6 questions, please?

7 MR. FAULKENBERRY: Thank you, Owen.

8 Dr. Cloud, on what date were you first contracted
9 to do work for PG&E as related to the seismic diagram error?

10 DR. CLOUD: Contacted?

11 MR. FAULKENBERRY: Contracted.

12 DR. CLOUD: Contracted.

13 Let me answer that in the way it happened.

14 In late September, and the date, I don't remember
15 -- but in late September at about the time the diagram
16 error was discovered, I was asked to come over to PG&E and
17 meet with them to talk with them about -- to find out
18 what had been discovered and what I was principally asked
19 to do was to think about what I or my firm may be able to
20 do to determine whether or not there were additional errors
21 of this kind in the design of the plant.

22 There was no formal -- I'm answering the
23 question in this way, because there was no formal contract
24 at that time and I did begin -- I did respond to the request
25 that they made and with the program that was presented to

1 the NRC on October 9th.

2 MR. FAULKENBERRY: So, if I understand correctly,
3 it was late September of 1981 that you first became involved
4 with PG&E in work efforts in relating to the diagram error.

5 DR. CLOUD: That's right.

6 MR. FAULKENBERRY: Now, what type of contract
7 did you have with PG&E at the beginning of this relation-
8 ship? Was it oral or written-type contract?

9 DR. CLOUD: It was strictly oral.

10 MR. FAULKENBERRY: Strictly oral?

11 DR. CLOUD: As I just mentioned to you.

12 MR. FAULKENBERRY: Now, have you since that
13 time established a written contract with PG&E or is it still
14 an oral contract?

15 DR. CLOUD: No. As we began work, then I did
16 furnish a proposal to PG&E and there is a contract to
17 perform this work in place at the moment.

18 MR. FAULKENBERRY: A written contract?

19 DR. CLOUD: Yes. A formal contract.

20 MR. FAULKENBERRY: Can you tell me approximately
21 what date that written contract was established?

22 (Pause)

23 Just a ballpark date, if you can?

24 DR. CLOUD: It was in October. Late in October,
25 I would say. It may even have been in November. It takes

1 a certain amount of time to process the paper work on these
2 kinds of things.

3 MR. FAULKENBERRY: Dr. Cloud, in the beginning
4 when you were under an oral contract with PG&E, were there
5 any instructions defined in this oral contract with
6 relation to how the results of your work would be handled
7 with regard to presentation to PG&E for either their
8 review and comment prior to submittal to the NRC?

9 DR. CLOUD: No.

10 MR. FAULKENBERRY: Now, with regard to the
11 written contract that was established either in late
12 October or early November, 1981, is there anything contained
13 within this written contract that defines how the results
14 of your work should be handled prior to submittal to the
15 NRC?

16 DR. CLOUD: I don't think so. I don't think so,
17 but to honest to you, I think I only read the last paragraph
18 of the written contract. I'm almost certain that there is
19 not, though.

20 It's a factual matter. We can read it, if it
21 becomes important.

22 MR. FAULKENBERRY: Dr. Cloud, can you tell us
23 when you actually started the performance of this work
24 that we have described here? The work that is related to
25 the seismic reverification -- related to the diagram error?

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DR. CLOUD: I first began work on the phase that we started out on in late September. That had been the last week in September.

(Pause)

MR. FAULKENBERRY: When you started this work, what was the scope of work to be performed as defined by PG&E?

DR. CLOUD: As I mentioned to you, PG&E asked me to consider what my company could do to gain some assurance that there would not be further errors of the diagram error type. I worked out a program -- I worked out a program to address that issue.

The program was presented to the NRC on October 9th. In the October 9th meeting, Mr. Denton requested that a preliminary report of part of the program I presented be prepared at the earliest time. In particular that it be prepared prior to the resumption of the fuel loading process.

This has been a long rambling answer, but the scope -- So, at that moment, we began -- That is to say, immediately following the October 9th meeting, we began on the task that had been requested by Mr. Denton.

I believe, at least in my own mind, it was understood that we would go ahead and perform the program that I had proposed which was described in the October 9th

1 meeting and the idea being that we would prepare the
 2 interim report containing a review of the Blume interfaces
 3 prior to the resumption of the fuel loading process and then
 4 the other aspects of the program that I proposed at that
 5 time would be completed subsequently and prior to the
 6 power assension phase.

7 That was the work that I believe that we were
 8 asked to do. Although, it wasn't, as I mentioned, --
 9 there weren't formal: "Please do this and yes, we'll do
 10 this."

11 It wasn't a formal negotiation on the point.

12 MR. FAULKENBERRY: When you first started this
 13 work that you described, who within PG&E did you report
 14 to?

15 DR. CLOUD: Okay. The -- Our contract was
 16 arranged through and by Mr. Jim Rocca who is the chief
 17 mechanical engineer.

18 (Pause)

19 MR. FAULKENBERRY: Now, was Mr. Rocca also your
 20 principal contact at PG&E for your day-to-day working
 21 purposes during this time?

22 DR. CLOUD: No, he was not.

23 At the time we began this work, immediately
 24 following the October 9th meeting -- when I say began, we
 25 began the main brunt of the effort -- I knew that it was

1 going to be an immense amount of work to be done in a
2 short time and I knew that there would be a lot of pressure.
3 I requested that one person be assigned exclusively to
4 work with our people.

5 Mr. Jim McCracken under James Rocca was assigned
6 for this purpose and he's been very helpful to us and has
7 devoted his entire day and many evenings to this job.

8 MR. FAULKENBERRY: Who, then, was actually giving
9 you management direction from the PG&E side at that time?
10 Was this Mr. Rocca?

11 DR. CLOUD: When you say management direction,
12 it presumes something. Actually, we were going full --
13 this would be in the post October 9th period and we were
14 going at our maximum capacity to complete the work that
15 had been requested by Mr. Denton in the October 9th meeting
16 and we knew what our job was and I would say that we were
17 not receiving any direction. I mean, they weren't telling
18 us what to do, if you follow me.

19 MR. FAULKENBERRY: Can we explore your relation-
20 ship with Mr. Jim Rocca for just a moment?

21 DR. CLOUD: Sure.

22 MR. FAULKENBERRY: You stated the contract was
23 arranged by and through Mr. Rocca, yet your day-to-day
24 contact was with Mr. McCracken. What was your relationship
25 with Mr. Rocca during the performance of these early work

1 activities?

2 DR. CLOUD: I'm not sure how to answer that. I'm
3 not sure what our relationship was. I would talk with him
4 from time to time.

5 Keep him appraised of our progress, I guess. It
6 was strictly informal conversations between he and I.

7 MR. FAULKENBERRY: Dr. Cloud, on what date was
8 the first written report prepared covering the work that
9 you just described? Written report or written document?

10 DR. CLOUD: Sure.

11 I think that it would be helpful to understand
12 this if we had a calendar to put on the table. Because I
13 would like to take you through exactly the events that
14 occurred.

15 (Pause)

16 This is October 9th. This is the meeting with
17 the NRC that really launched the major part of the effort.

18 We came back and began -- We took Saturday off.
19 Everybody was exhausted in the preparations for the meeting
20 and we came back and began work eight o'clock Sunday morning.

21 We worked through this period. I had to go to
22 get a paper completed in a week, because we were thinking
23 in terms of resuming the fuel loading on the 31st. So,
24 we were working literally night and day during this period.

25 Sunday -- Sunday, by noon was our goal. So, I
said, by god, we're going to get a report by then live or

1 die.

2 And so our first complete package -- our first
3 paper -- our first working paper was completed Sunday at
4 noon. In fact, my people stayed up all night long Saturday
5 night in order to get that done.

6 MR. FAULKENBERRY: This was Sunday noon on
7 October the 18th?

8 DR. CLOUD: The 18th, right.

9 Now, I spent Sunday afternoon reading through it
10 and I said, "This is entirely too rough to let outside
11 our company." And it was. It was quite rough, but we had
12 all of our elements in place.

13 I thought if we could get to that point, it
14 would be a milestone and it would give us a base -- a
15 framework to work to to get the damn report finished.

16 So, we revised it Sunday afternoon and evening,
17 all day Tuesday and -- let's see -- Monday and Tuesday.

18 Then on Wednesday -- I believe it was on Wednes-
19 day that we finally got a reasonable working paper and --

20 MR. FAULKENBERRY: Excuse me, Dr. Cloud.

21 DR. CLOUD: Sure.

22 MR. FAULKENBERRY: What date is Wednesday?

23 DR. CLOUD: The 21st.

24 MR. FAULKENBERRY: Thank you.
25

1 DR. CLOUD: So it was either late Tuesday night
2 or Wednesday afternoon. I'm not sure at the moment exactly
3 when, but we took it -- At that moment, we made several
4 copies and I brought them over to Jim -- I didn't in fact --
5 I believe I brought those over. I brought them over. Gave
6 them to Jim McCracken and told him that I wanted any facts
7 in this report corrected.

8 Our people were continuing to work on the
9 project during that period.

10 MR. FAULKENBERRY: Okay, Dr. Cloud can we stop
11 here for just a moment?

12 The report or the second draft that you were
13 referring to that you gave to Mr. McCracken on October the
14 21st, is this the draft that I show you here?

15 DR. CLOUD: Yes, I believe it is.

16 MR. FAULKENBERRY: For the record, this is the
17 draft report that is dated October 1981 identified as a
18 Preliminary Report on the Design Interface Review of the
19 Seismic Reverification Program prepared by Robert L. Cloud
20 Associates, Incorporated and it was submitted to PG&E
21 under a cover letter signed by R.L. Cloud to Mr. Jim
22 Rocca dated October the 21st, 1981.

23 Now, Dr. Cloud, on this first paper that you
24 identified that you said was completed on Sunday October
25 the 18th, was this paper in anyway submitted to PG&E for

1 information or for review?

2 DR. CLOUD: No. It was not. It did not leave
3 our office.

4 MR. FAULKENBERRY: So, if my understanding is
5 correct, the first document that was submitted to PG&E was
6 this report that we identified dated October the 21st. Is
7 that correct?

8 DR. CLOUD: Right.

9 (Pause)

10 MR. FAULKENBERRY: Now, Dr. Cloud, prior to
11 preparation of October the 21st draft, were any of the
12 results of your work discussed with or submitted to PG&E
13 personnel for information, review or comment?

14 DR. CLOUD: I cannot tell you for certain which
15 results or to what extent they were discussed. However,
16 I know that at least to some degree I -- we had told people
17 that we were discovering glitches.

18 We didn't have all that much time to be talking
19 to people, but almost certainly we would have said something
20 to someone. I'm sure that we -- we probably mentioned
21 it to McCracken.

22 It's not a good answer, because I'm not clear.
23 I don't remember any specific formal discussions that I
24 held with anyone.

25 MR. FAULKENBERRY: Other than Mr. McCracken, who

1 was your day-to-day contact with PG&E during that time
2 frame? Do you recall having conversations regarding the
3 results of your work with anyone else, specifically
4 people within the management chain in PG&E?

5 DR. CLOUD: I may or may not have mentioned
6 some of our findings to Rocca. I simply don't remember.

7 MR. FAULKENBERRY: Do you recall --

8 DR. CLOUD: Excuse me. If I did, it would have
9 been on an in passing basis. On an informal basis.

10 MR. FAULKENBERRY: Based upon your recollection
11 of the contacts that you had within PG&E of information --
12 discussing information with him at this time, do you recall
13 anyone within PG&E providing any feedback to you with
14 regard to these discussions that you would consider to be
15 evaluation of this information or a request or an input
16 of how this information should be handled?

17 DR. CLOUD: Oh, no. That wasn't done. No one
18 ever gave us any instructions on how our information should
19 be handled.

20 (Pause)

21 Let me add something to that with respect to
22 discussions of the findings. I believe -- What I'm going
23 to say occurred after the 21st, but in the period -- in this
24 week and early in the next week, it became clear that we
25 had discovered simply too many incorrect applications of

1 spectra to the conduit support and at that time, I did make
2 a clear recommendation to someone -- someone in the civil
3 engineering department and I'm not sure which people were
4 involved at the moment, but I did make a clear recommenda-
5 tion that additional work should be performed and I speci-
6 fically suggested that some dynamic analysis of the conduit
7 supports be done and I suggested that it would be desirable
8 to perform tests in the field to discover the dynamic
9 characteristics of these.

10 The program that I had in mind was for PG&E to
11 do this to consider several worst case -- by worst case,
12 I mean, most highly loaded of the conduit supports and
13 thereby by doing dynamic analysis on certain worst most
14 highly loaded supports, thereby requalify all of them
15 across the board.

16 I felt that they needed to be requalified and
17 basically told them that and suggested a way to do it. And
18 they did start out on that program.

19 (Pause)

20 MR. FAULKENBERRY: Dr. Cloud, to back up just
21 a step here and for the record, was the draft report that
22 was prepared by you and dated October 1981 and submitted
23 to PG&E on October the 21st, 1981, was that report -- draft
24 report submitted to PG&E for their review and comment?

25 DR. CLOUD: It was submitted to them so that I

1 could obtain any corrections to factual errors that we may
2 have made and also to get some feedback from them on any
3 serious omissions that we may have let creep into our work.

4 MR. SHACKLETON: Dr. Cloud, to make it perfectly
5 clear for the record, what we're saying, then, is that this
6 report dated October 21, 1981 -- up to that time, that is
7 the first and only report that was given to PG&E.

8 Were there any memoranda that were given for
9 their review prior to that time?

10 DR. CLOUD: No.

11 MR. SHACKLETON: So, are we correct then in
12 stating for the record that this was the first document
13 and the only document concerning the work performed by your
14 staff?

15 DR. CLOUD: Right.

16 MR. SHACKLETON: Thank you.

17 DR. CLOUD: Up to that time.

18 (Pause)

19 MR. FAULKENBERRY: Dr. Cloud, prior to your --

20 DR. CLOUD: May I interrupt a minute?

21 MR. FAULKENBERRY: Sure.

22 DR. CLOUD: Sorry, Bobby, but if you look at this
23 report, it's a fantastic amount of work and it was done in
24 a very short time.

25 MR. FAULKENBERRY: Now, this report which we

1 are discussing which was submitted to PG&E on October the
2 21st, 1981. That was submitted to Jim Rocca. Is that
3 correct or was it given to Jim McCracken and hand-carried?

4 DR. CLOUD: It was hand-carried to Jim McCracken
5 and with the request that it be given to key engineers in
6 each of the disciplines.

7 MR. FAULKENBERRY: Do you know who these key
8 engineers would be that the report would have been given
9 to?

10 DR. CLOUD: I could speculate, but I can't say
11 for sure.

12 MR. FAULKENBERRY: Dr. Cloud, prior to your
13 submittal of the draft report to PG&E on October the 21st,
14 1981, were you ever advised by PG&E, by the NRC or anyone
15 that the results of your work should not be submitted to
16 PG&E prior to it being in final form for submittal to the
17 NRC?

18 DR. CLOUD: Oh, no.

19 MR. FAULKENBERRY: Dr. Cloud, could you explain
20 what your standard practice is for preparing and submitting
21 reports to your clients?

22 DR. CLOUD: Well, yes. This topic, of course,
23 has been discussed at length during the last couple days.
24 But we regularly insist that a draft of any work -- drafts
25 of any reports that we're going to send to any of our

1 clients be sent to them first on a draft basis primarily
2 for the -- as I mentioned earlier -- for the correction of
3 any factual errors and for -- to correct any omissions that
4 may have been made. We do that with all of our clients.

5 To my knowledge, most, if not all consultants,
6 do that and frankly, I think that it's a practice that
7 is necessary when you're involved with heavily technical
8 work when you're dealing with -- you know -- large numbers
9 of facts and when the reputation of your company and in
10 fact your livelihood depends upon your reputation for
11 being able to do correct and -- good and correct work.

1 MR. FAULKENBERRY: Dr. Cloud, based upon what
2 you said, would you consider what the procedure that you
3 used in submitting this draft report to PG&E, then, and
4 what you have just described as standard practice for
5 engineering consulting firms?

6 DR. CLOUD: Yes, I would, with one qualification.
7 In this particular case our work was continuing to evolve.
8 We didn't really get finished with it clear up until the
9 final report was issued. So this particular transmittal
10 to PG&E was done on a much more informal basis than we
11 normally do. And it was done with the understanding that
12 we were continuing to find additional findings, we were
13 continuing to clarify certain facts and continuing to
14 clarify certain of the ways that the seismic work was done
15 by John Blume & Associates -- sorry, U.R.S. Blume.

16 MR. FAULKENBERRY: Okay, Dr. Cloud. Based upon
17 what you said, during the October timeframe, specifically
18 around the middle of October or the 21st of October, when
19 the draft report was submitted to PG&E, do you consider
20 your client relationship with PG&E to be "a standard
21 relationship" with regard to the providing of the results
22 of your work?

23 DR. CLOUD: Essentially, yes. I might point out
24 -- and the reason I qualified my previous answer is that
25 many, if not most, of our clients are not in the Bay Area.

1 So when we send them a draft it is normally on a much more
2 finished and formal basis. For example, just last week I
3 sent -- we finished a package of work for a client in the
4 Midwest. We finished it essentially complete. We sent it
5 to him with a letter and said, you know, here is the report
6 that we basically intend to send you and could you review
7 it and let us have your comments.

8 So in the sense that the transmission of these
9 drafts was perhaps more formal for other clients is the
10 only difference. We made certain in this case, because
11 of the informality that -- primarily because of the informality
12 that we discovered in the early design work of the plant
13 -- that we set a ground rule for ourselves that we were
14 going to be very strict in our documentation of our communi-
15 cations with PG&E. We did and everything that has been
16 sent to them has either a transmission page -- an information
17 transmission form or a cover letter. These are all filed
18 and kept in business-like order.

19 But as I mentioned to you, the packages were
20 carried over to McCracken and asked for an expeditious
21 review for the factual content.

22 MR. SHACKLETON: Dr. Cloud, have you performed
23 consulting work for PG&E before?

24 DR. CLOUD: Yes.

25 MR. SHACKLETON: And in your prior work for your

1 client what was the practice at that time of submitting
2 reports?

3 DR. CLOUD: The major work that I did for PG&E
4 before was on the systems interaction program. That program
5 was a pioneering venture at Diablo Canyon. That program
6 had never -- a program of that type had never been con-
7 ducted before. We had to formulate all the concepts and
8 the ideas from scratch. We did send PG&E program documents
9 on that work which were revised I would say many, many
10 times before it ever got into the kind of -- and revised
11 and it was discussed between us, between PG&E and between
12 the NRC, because we were all three parties working to come
13 up with a viable concept for the conduct of this work.

14 MR. SHACKLETON: At that time, Doctor, did you
15 send interim reports in rough draft form, such as the
16 draft we are discussing, to PG&E before you finally came
17 with a final report?

18 DR. CLOUD: Yes, we did. In fact, on that
19 program, the final report has not yet been turned in.

20 MR. SHACKLETON: Relating to this report we
21 refer to as October 21, 1981, the date of the transmittal
22 letter, was that report requested by PG&E personnel to be
23 brought over or was it your decision to bring that report
24 over to PG&E?

25 DR. CLOUD: I do not recall it being formally

1 requested; however, both our organization and the PG&E
2 people were focusing on this effort because it was one
3 of the key documents that had been requested by the NRC
4 at the October 9 meeting. Just to put the thing in per-
5 spective, in the October 9 meeting the NRC requested three
6 specific things be done prior to the resumption of the fuel
7 loading process. It was this report we are now discussing,
8 it was the description of the reverification program that
9 would be proposed, and it was a technical report. So
10 these three items were in the spotlight from day one and
11 everyone understood that we were trying to get it as soon
12 as we possibly could.

13 MR. SHACKLETON: Thank you.

14 MR. FAULKENBERRY: Dr. Cloud, in a previous
15 question you stated that prior to the submittal of the
16 October 21, 1981 draft you had not been advised by the NRC
17 or PG&E or anyone else with regard to not submitting to
18 PG&E the results of your work prior to being in final form
19 for submittal to the NRC. The question is, when were you
20 first informed by PG&E or the NRC regarding the concern
21 for total independency and informed that the results of
22 your work should not be reviewed by PG&E prior to it being
23 in final form for submittal to the NRC?

24 DR. CLOUD: Okay. Good question. The issue of
25 independency, at least in my mind, really reached the degree

1 of importance that it has now achieved in the meeting with
2 the NRC on November 3. At that time, the issue of independ-
3 ency was discussed, you know, at some length; however, it
4 should be understood that no, even at this date, to my
5 knowledge, there is no specific groundrule on what exactly
6 what and how the concept of independence is to be preserved.

7 You can be sure that because of the sensitivity
8 of the issue now that we will in the future be proceeding
9 with a great deal of caution on this issue.

10 MR. FAULKENBERRY: Okay, Dr. Cloud, have you
11 since the submittal of the October 21, 1981 draft, have
12 you submitted any written documentation or reports in
13 draft form or otherwise to PG&E for their information,
14 review or comment?

15 DR. CLOUD: Since the submittal of the 21st?

16 MR. FAULKENBERRY: That's correct.

17 DR. CLOUD: Okay. As I mentioned to you, we
18 considered this paper that we sent in a rough working paper.
19 We collected comments, which I believe you have seen, and
20 reissued the report to PG&E on the 26th. Once again, we
21 carried over -- I myself did not personally do that on the
22 26th, but we did bring over a second draft on the 26th of
23 October.

24 MR. FAULKENBERRY: Dr. Cloud, would this be the
25 second draft that you are referring to?

1 DR. CLOUD: I don't know, Bobby. I believe that
2 our second draft was dated -- continued to be dated October,
3 I mean it didn't have the November 12 date. I believe this
4 was the draft -- this looks like the cover letter for the
5 draft that we sent in finally.

6 MR. FAULKENBERRY: Now if I understand you
7 correctly, considering the October 21, 1981 draft to be
8 "the first draft", there was a second draft submitted to
9 PG&E on or about the 26th of October, is that correct?

10 DR. CLOUD: Yes, that's right. Now I recognize
11 this particular sentence in this draft and this particular
12 sentence we added in the final draft. So the paper that
13 you have now handed me is the draft that was sent formally
14 to PG&E for their use and for submitting to the NRC.

15 MR. FAULKENBERRY: Now is it fair to characterize
16 this draft which I am showing you as the "third draft"?

17 DR. CLOUD: I'm not sure how we want to number
18 them. I mentioned that we had a paper together on the
19 18th, we sent a paper on the 21st and we sent a paper on
20 the 26th and we sent our final product on the 12th. The
21 paper we are now talking about is the paper that was sent
22 on the 12th.

23 MR. SHACKLETON: That's 12 November, Dr. Cloud?

24 DR. CLOUD: Yes, 12 November.

25 MR. FAULKENBERRY: Okay. To try to avoid confu-

1 sion, with regard to what you said this morning, the 18th
2 paper was never sent to --

3 DR. CLOUD: The 18th paper was never sent to
4 PG&E. The 21st paper was --

5 MR. FAULKENBERRY: The first draft submitted to
6 PG&E.

7 DR. CLOUD: That's right. Was sent to PG&E.
8 The paper of the 26th was sent to PG&E.

9 MR. FAULKENBERRY: Let us characterize the paper
10 of the 26th as the second draft that was submitted to PG&E.
11 Is that correct?

12 DR. CLOUD: Yes.

13 MR. FAULKENBERRY: And then characterize the
14 November 12 draft as the "third draft" submitted to PG&E.

15 DR. CLOUD: Yes. Third and final.

16 MR. FAULKENBERRY: Okay.

17 DR. CLOUD: The draft of November 12 was not sent
18 for any further comment. It was sent, here it is and you
19 can send it to the NRC now.

20 MR. FAULKENBERRY: For the record, the third
21 draft that is being discussed is the draft report that is
22 identified as the Preliminary Report Seismic Reverification
23 Program. It is dated November 12, 1981. It is attached to
24 a cover letter which was signed by Philip A. Crane and
25 addressed to Mr. R.H. Engelken and dated November 18, 1981.

1 Dr. Cloud, on the third draft that we have just identified,
2 you said this was submitted by you to PG&E. Could you give
3 us the approximate date you submitted this to PG&E?

4 DR. CLOUD: I'm sure it was on the 12th. I'll
5 say this, it was either on the 12th or the 13th.

6 MR. FAULKENBERRY: Now to your knowledge, do
7 you know whether PG&E -- let me rephrase that question --
8 was the November 12 -- the third draft submitted to PG&E,
9 was it revised before it was ever submitted to the Commission?

10 DR. CLOUD: You mean between the 12th and the
11 time it reached the Commission?

12 MR. FAULKENBERRY: That's correct.

13 DR. CLOUD: Our company did not revise it.

14 MR. FAULKENBERRY: Now I would like to go back
15 to the October 26 draft, what we have characterized as the
16 second draft. Could you explain how this draft was submitted
17 to PG&E?

18 DR. CLOUD: Sure. It was sent in the same way
19 that the 21st was. That is to say that the transmission
20 process was the same as the 21st.

21 MR. FAULKENBERRY: It was given to Mr. McCracken
22 for his distribution within PG&E?

23 DR. CLOUD: Yes.

24 MR. FAULKENBERRY: Now did PG&E personnel review
25 that draft and furnish you comments on that draft?

1 DR. CLOUD: Yes, they did. The comments were --
2 in preparation for this meeting I went back and dug all
3 these papers out and looked through them -- the comments
4 were much fewer in number than on the draft of the 21st.
5 The 21st we got a whole lot of comments, as you yourself
6 have seen. On the 26th, the draft of the 26th, we got
7 very few.

8 MR. FAULKENBERRY: Now the NRC, we have copies
9 of the "first draft", the draft that was issued on October
10 21. Do you have in your office copies of the second draft
11 with the comments that PG&E provided you?

12 DR. CLOUD: Yes, we do. We saved everything.

13 MR. FAULKENBERRY: Okay. Would you once again
14 characterize the extent of comments that were provided on
15 the "second draft" with regard to number and content?

16 DR. CLOUD: Yes. As I said, they were much, much
17 fewer in number. We have in our office I believe it is
18 true that we have two copies of the 26th submittal and
19 there's probably fewer than -- I'd better not say it --
20 what I started to say is there's probably fewer than a
21 half dozen, but if we count them up there'll be ten. But
22 it's just a small number.

23 (Pause)

24 MR. FAULKENBERRY: Now with regard to the October
25 21, 1981 draft report, can you tell us how many -- let me

1 rephrase that question. How many copies of the October 21,
 2 1981 draft report did you receive back from PG&E with
 3 comments either attached or incorporated?

4 DR. CLOUD: Okay. Our records at the moment
 5 show that we received three at least. I am uncertain as to
 6 whether it was three or four.

7 MR. FAULKENBERRY: Now can you tell me how many
 8 copies of the October 26 draft report, the one we character-
 9 ized as the second draft, that you received back from PG&E
 10 with comments either attached or incorporated?

11 DR. CLOUD: Yes. I believe we have two.

12 MR. FAULKENBERRY: Do you know who within PG&E
 13 reviewed and commented on the October 21 draft report, or
 14 the first draft report?

15 DR. CLOUD: Well, we discussed this before. As
 16 I mentioned, I brought them to Jim McCracken and I asked that
 17 he give one copy to a senior level engineer in each of the
 18 disciplines. As I said, I could speculate on who that
 19 might be, but I really don't know.

20 MR. FAULKENBERRY: So you do not know who within
 21 PG&E actually provided comments back to you on this first
 22 draft report?

23 DR. CLOUD: No. We have, you know, the initials
 24 of different people. But the only -- but no, I don't have
 25 it in my mind at the moment and I'm sure, however, that if

1 you like we could get out the copies and see if we could
2 figure out whose initials are associated with the comments.
3 I am also sure that McCracken will know.

4 MR. FAULKENBERRY: Do you know who within PG&E
5 reviewed and commented on the October 26 or the second
6 draft report?

7 DR. CLOUD: No. As I mentioned, the process is
8 the same. I would presume it would be the same people.

9 MR. FAULKENBERRY: Now in the first draft report
10 or the October 21 report the NRC has been provided copies
11 numbered 1, 3, 4 and 5. Do you know what happened to Copy
12 No. 2?

13 DR. CLOUD: No, I don't. I've wondered about that
14 myself.

15 MR. FAULKENBERRY: Do you know who Copy No. 2
16 was addressed to?

17 DR. CLOUD: No, I don't.

18 (Pause)

19 MR. FAULKENBERRY: Dr. Cloud, did any of the
20 comments you received from PG&E on the -- regarding the
21 October 21 or first draft report -- result in your removing
22 from this draft report and as submitted to the NRC in the
23 November, 1981 report, did it remove any adverse findings
24 that cannot be justified by retrievable documentation?

25 DR. CLOUD: Absolutely not. Other than any that

1 our people may have changed as a result of their further
2 findings. I'm sure that the documentation on that would
3 be retrievable. In fact, I'm certain of it, because we
4 have it all in our logs.

5 MR. FAULKENBERRY: Now would you respond to that
6 same question as it relates to the second draft report, the
7 October 26 draft report?

8 DR. CLOUD: Exactly the same process.

9 MR. FAULKENBERRY: So I understand, any adverse
10 findings that were contained in either the October 21, the
11 first draft report, or the October 26, second draft report,
12 that were subsequently eliminated or not contained within
13 the third draft report or the November draft report, you can
14 justify their omission with retrievable documentation?

15 DR. CLOUD: Yes, I'm sure we can. When you
16 visited our office, we pointed out to you that we kept a
17 very extensive set of log books on the information we
18 reviewed. I'm sure that -- I know for sure that any nega-
19 tive findings or any negative statements that were changed
20 would only be done on the basis of finding later information
21 that corrected those adverse statements.

22 MR. FAULKENBERRY: Dr. Cloud, as a result of the
23 comments you received from PG&E on both the first draft and
24 the second draft, did you change any passages in the report
25 strictly for the purpose of placing PG&E or its contractors

1 in a more favorable light?

2 DR. CLOUD: No.

3 MR. FAULKENBERRY: Dr. Cloud, you have explained
4 to us who within PG&E you had a day-to-day working relation-
5 ship with during the initial phases of your work and also
6 who within PG&E I guess initiated the contract during the
7 early stages of your work. Now who within PG&E do you
8 currently report to?

9 DR. CLOUD: George Maneatis.

10 MR. FAULKENBERRY: Could you tell us then when
11 you stopped reporting to Mr. Roca and started reporting to
12 Mr. Maneatis?

13 DR. CLOUD: I can't say for sure, but it was at
14 the time of or immediately following the November 3 meeting
15 with the NRC.

16 MR. FAULKENBERRY: Dr. Cloud, at the November
17 3, 1981 meeting with the NRC -- and you were present at
18 this meeting -- Mr. Norton stated that as of November 3,
19 1981, no results of your work had been submitted to PG&E.
20 Yet you and other persons present at the meeting knew of
21 the submittal of the October 21 draft report and, possibly,
22 the October 26 draft report. First of all, did you hear
23 the statements made by Mr. Norton at that meeting?

24 DR. CLOUD: I had to have heard the statements;
25 I was there. But I don't recall him saying that no results

1 had been submitted to PG&E. I certainly don't remember it
2 in those terms.

3 MR. FAULKENBERRY: Dr. Cloud, would it be helpful
4 for us to show you the transcript of that particular meeting
5 and the statement made by Dr. Norton?

6 DR. CLOUD: We have nothing to lose by that.

7 MR. FAULKENBERRY: Okay.

8 (Pause. Mr. Faulkenberry presents the transcript
9 to Dr. Cloud.)
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1 (Pause)

2 MR. SHACKLETON: Page 216, isn't it Bobby?

3 MR. FAULKENBERRY: For the record, Dr. Cloud,
4 I'll read what Mr. Norton stated in the or what is
5 stated in the transcript of the meeting of November 3rd.

6 On page 216, Mr. Norton, and he was talking
7 with regard to the results of your work.

8 He says, I might add we do not have it. It's
9 not a question of us reviewing it. We don't have it
10 either. It just hasn't been done yet.

11 DR. CLOUD: When this issue came up, which
12 first came up as far as I was concerned on Monday, of
13 this week, the day before yesterday, I went back into
14 my memory. I looked at this transcript and the context
15 of that discussion was focused on the report that I
16 would be giving to P.G.&E. that would subsequently
17 be sent to the NRC. That's what I had in my mind
18 at the time. That's what, as far as I was concerned,
19 Norton was talking about and that report had not been
20 done.

21 I was acutely conscious of the deficiency
22 that existed in this meeting by virtue of the fact that
23 our report on the Blume review had not been completed.

24 I went back deeper into my frame of mind and
25 way of thinking at the time and in the day or two

1 preceding this meeting when I was rehearsing my -- the
2 presentation that I intended to give, I was asked
3 repeatedly when will your report be done and I always
4 replied it will be done by the end of this week or the
5 end of next week, by the first of the week after.

6 And, that's what I had in my mind. I
7 was constantly thinking about the three things that
8 were asked for by Denton on October 9. The program,
9 the so-called interim report and the technical report.
10 It was my job to prepare the program and my job to
11 prepare the interim report.

12 Of the two things that I had to do, I had
13 completed one and did complete a description of the
14 program we intended to do and we brought it with us
15 and we gave it to the NRC on that very day. In fact
16 we gave you a copy.

17 But I knew that we hadn't finished the so-called
18 interim report, the one that we're now discussing. I
19 knew that we hadn't finished that and frankly, I felt
20 bad about it.

21 At that time the entire context of that
22 discussion was focused on the report that we would
23 ultimately be turning into P.G.&E. for the release
24 to the NRC. So, the question is -- which I've been
25 asked in the last day or two, well, why didn't you say

1 something. Why didn't you correct them? Frankly, it
2 never occurred to me.

3 I knew that my work wasn't finished.

4 As far as, you can see from the lengthy
5 discussion that we've just held, that this report was
6 in a constant state of evolution.

7 It wasn't finished. I hadn't even at that
8 time completed my own review of it in the details that
9 I wanted.

10 MR. FAULKENBERRY: Dr. Cloud, did either
11 Mr. Norton or Mr. Manianis -- had they ever seen or
12 were they aware of the fact that the first and second
13 draft copies of your report were within P.G.&E. prior
14 to November 3rd?

15 DR. CLOUD: Obviously, I can't reply in a
16 factual way. However, from the way that we handled it
17 and the people we sent it to, I can't imagine how
18 either of them would have ever seen it or known about it.

19 I don't even now if Jim Rocca at that time
20 had seen it. I should say in the case of Norton that
21 it's inconceivable that he would have seen it or known
22 about it because he had only just come to San Francisco
23 on the Sunday preceding the meeting.

24 Excuse me -- to continue with this. You should
25 understand that the paper that we had sent to the P.G.&E.

1 engineering staff -- it wasn't something that we were
2 talking about. It wasn't something I discussed with
3 any of the P.G.&E. management.

4 It was our working paper -- we sent it strictly
5 to the engineers involved to get their comments on matters
6 of a factual nature.

7 MR. FAULKENBERRY: Dr. Cloud, going back to
8 the transcript that we just read a passage from, this is
9 the transcript of the November the 3rd, 1981 meeting and
10 specifically lines 23 through 25 which I'll read to you
11 here on page 215, and also lines 1 through 4 on page 216,
12 In response to a question by Mr. Eisenhut, "When will we be
13 expected to see that short term report? Bob Cloud said
14 it's essentially complete."

15 Now to which you were asked by Mr. Norton
16 to answer and you responded -- again, I'll quote, "I believe
17 it's -- we will be turning it in either this week or next
18 so you should have it shortly thereafter."

19 Now the question is, Dr. Cloud, why did you
20 not mention the draft reports you had submitted to P.G.&E.
21 on October 21st and also October 26th, 1981?

22 DR. CLOUD: It's exactly as I replied before.
23 The only thing in my mind at that time and at that meeting
24 and in that discussion, the only thing in my mind was
25 the report that we would ultimately be turning into P.G.&E.

1 I knew that report wasn't finished and it was
2 a matter that as I mentioned to you, was weighing very
3 heavily on my mind and the only thing I could think of
4 was the report that we would finally be turning in and
5 I understood all of that entire discussion would be
6 related to that.

7 Frankly, I didn't even consider the earlier
8 paper that we circulated to the engineers -- I didn't
9 even consider that in the nature of a draft as far as
10 we were concerned.

11 MR. FAULKENBERRY: You're talking about the
12 "first draft and second draft" that we have discussed.

13 DR. CLOUD: That now characterized as
14 such.

15 But as far as I was concerned, that was a
16 working paper that we had sent to their engineering staff
17 to make sure whether or not we had any facts -- to make
18 sure whether we had any of our facts wrong.

19 And, my reply to your question as I replied
20 before is that the only thing I had in my mind was the
21 report that we would be sending to P.G.&E. and the NRC
22 and that's the reason I replied in that vein.

23 As you can see, that's the only thing I was
24 thinking of.

25 MR. FAULKENBERRY: DR. Cloud, do you consider the

1 third draft or the draft that was submitted to the NRC
2 on November 19, 1981 to be a true and complete characteriza-
3 tion of the results of the work that you completed to that
4 date as regards to your reverification work on Diablo
5 Canyon?

6 DR. CLOUD: You mean as of the date of November
7 12th?

8 MR. FAULKENBERRY: That's correct.

9 DR. CLOUD: Yes, it is true and it is complete
10 for the work that we had completed up to that time.

11 Now, I think in fact what made me realize
12 that this -- how I knew this was our final draft is that
13 we have a sentence in there saying, the cut-off date for
14 this information is October 28th, so it's a true and
15 correct statement of all our work up to October 28th.

16 MR. FAULKENBERRY: And a complete statement
17 of your work?

18 DR. CLOUD: And a complete statement of the
19 work we did, but as you can see from the report itself,
20 it does not cover the entirety of the review of the
21 interface with John Blume. There are still additional
22 things that need to be done.

23 MR. FAULKENBERRY: I think it's important to
24 recognize your work and your findings from your work
25 complete and a true statement of your findings as well as

1 your work.

2 DR. CLOUD: At that time, yes.

3 MR. FAULKENBERRY: I think that concludes
4 the questions I have for Dr. Cloud.

5 Do you have any additional ones?

6 MR. SHACKLETON: No, I have no additional
7 questions at this time.

8 Dr. Cloud, is there anything that you would
9 like to state at this time to clarify this inquiry?

10 Anything further?

11 DR. CLOUD: I don't think there's anything
12 I could say that would clarify it.

13 I can tell you that I'm personally very much
14 concerned about this questioning of our independence.

15 We do our work in a certain way. We do our
16 work in a certain way for P.G.&E. We do our work in
17 the same way for any other clients that we do.

18 We would never change any negative findings
19 arbitrarily at the request of a client. That would be
20 strictly an unprofessional thing to do. Even if I myself
21 wanted to, there's no way it could be done. We have a
22 crew of dedicated and idealistic people working in my
23 office.

24 Everyone of them are aware of the importance
25 of the safety of nuclear power. They are all aware of

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1 the provisions of --- 21 and there's simply no practical
2 way that the business could be conducted in other than
3 a straightforward and business like manner.

4 And I'm very much concerned about the
5 inuendos and implications of these questions.

6 I feel that they're mis-leading and frankly
7 insulting.

8 MR. SHACKLETON: Thank you.

9 Bobby, do you have anything further?

10 MR. FAULKENBERRY: Nothing, Owen.

11 MR. SHACKLETON: Dr. Cloud, we thank you
12 very much for your being here and for your time and this
13 will be the close of the interview of Dr. Robert L. Cloud
14 and the time is now 10:39 a.m.

15 (Whereupon, at 10:39 a.m, a one hour and 45
16 minute recess was taken.)

17 MR. SHACKLETON: This is December 16, 1981.
18 The time is 12:13 p.m. and this is a continuation of
19 the interview of Dr. Robert L. Cloud and we have
20 brought into the interview one Dr. Cloud's members of his
21 engineering staff, Mr. Paul H. Anderson.

22 Also present in the interview room which is
23 room 3101 in the headquarters building of Pacific Gas
24 and Electric at 77 Beale Street in San Francisco, from
25 the U.S. Nuclear Regulatory Commission in Region 5 is

1 Mr. Bobby H. Faulkenberry, Chief of Reactor Constructions
2 Projects Branch and my name is Owen C. Shackleton, Jr.
3 and I'm Senior Investigator for Region 5.

4 We have called Dr. Cloud and Mr. Anderson
5 in for continuation of this interview inasmuch as
6 Mr. Anderson has some information that they feel may be
7 of value in this investigation.

8 Mr. Anderson, I advised you prior to going on
9 the transcription that you have the right to have legal
10 counsel present.

11 Do you so desire to have an attorney present?

12 MR. ANDERSON: No, I don't.

13 MR. SHACKLETON: All right, fine. Would
14 you please stand and I will place you under oath.
15 Whereupon,

16 PAUL H. ANDERSON

17 having been first duly sworn, was called as a witness
18 herein and was examined and testified as follows:

19 MR. SHACKLETON: For the record, Dr. Cloud is
20 still under oath and also is present to give further
21 testimony.

22 Dr. Cloud, would you please explain the
23 new information that you have brought forth for the commission?

24 DR. CLOUD: Yes. As I was leaving the interview,
25 I encountered Paul Anderson in the hallway. Paul Anderson

1 is an engineer in our company and he pointed out to me
2 the fact that several of the handwritten comments that
3 are in the margins of the copy that we have characterized
4 as draft 1 which was sent under a cover letter dated
5 October 21st were in fact comments made by our own people
6 as an aid in the re-writing of the draft.

7 This is something that we had talked about
8 yesterday and the day before and I had intended to bring
9 it out in the earlier discussion, however it had slipped
10 my mind and Paul reminded me of this and I thought it
11 would be helpful as a relevant fact in the overall issue
12 to have Paul come and discuss this with you.

13 The situation is that in the first place
14 we had been discussing two separate issues of our draft
15 paper. The first was the one which we have referred to
16 as draft 1 of October 21 and the second was draft 2 of
17 October 26.

18 The comments that Paul will be discussing
19 are all those on draft 1 and the various controlled
20 copies of draft 1.

21 After we leave this interview, we will
22 check the copies that we have of draft 2 and ascertain the
23 origin of any comments, in fact the few comments that
24 are contained in those two papers.

25 MR. FAULKENBERRY: Okay, Mr. Anderson. As you

1 provide us the identification of the comments that were
2 entered by Dr. Cloud or employees of Dr. Cloud's company's
3 on copies of draft no. 1, would you identify which copy
4 of the draft that you are referring to and also the page
5 and paragraph of each copy of the draft, if you would
6 please do so.

7 MR. ANDERSON: The first copy, copy no. 3 of
8 draft 1 I have in front of me, there is only one instance
9 that I can recall that is obviously remarks in the margin
10 made by engineers and Cloud Associates while we were
11 constructing the second draft.

12 On page 33, section no. 3.3.5.1.2 on the dome
13 crane, we had some additional re-write and some light
14 differences here.

15 I made a big note that just says Insert B and
16 it's pretty standard editorial, at least by me, to have
17 the second copy that would be typed in it's place attached
18 with a B on it. That's the --

19 DR. CLOUD: The point is -- Bob Cloud here. The
20 point is that the words Insert B are your handwriting?

21 MR. ANDERSON: Yes, I did write Insert B.

22 MR. FAULKENBERRY: Excuse me, Mr. Anderson.

23 You stated that you wrote Insert B. Now,
24 did you or someone else within Dr. Cloud's company write
25 the information that was contained with Insert B that was

1 eventually placed into the next draft?

2 MR. ANDERSON: Yes, that information that was
3 placed in the next draft reflected any new information
4 we had had, reflected any factual corrections that
5 P.G.&E. may have referenced which also appear in the
6 margins.

7 That's the only comment in copy no. 3 of the
8 first draft.

9 I have before me now copy no. 4 of the first
10 draft and it also has one page where we made some
11 changes, the Cloud engineers made changes and that's
12 on page 61.

13 There's sections labeled conclusions. We have
14 given that a section number 5.0 and in addition, half-way
15 down the first paragraph we -- there's a statement that
16 says no additional explicit errors.

17 We changed that to no additional seismic
18 input errors and then ended the sentence there and started
19 a new sentence.

20 Above that, we also changed -- in the paragraph
21 above the conclusion section, we changed the word informa-
22 tion communications to informal communications. That was
23 also done internal to Cloud Associates.

24 That was the only instance in copy 4.

25 Now copy 5 --

1 MR. FAULKENBERRY: Excuse me, Mr. Anderson,
2 before we go to copy 5, I'm going back to copy three.
3 On page 33, you stated that you wrote the words Insert B
4 and employees of the Cloud Company wrote the material
5 that was contained in Insert B.

6 Now I'm referencing the handwritten comments
7 that were made in the left margin on page 33 -- were
8 these handwritten comments made by employees of Cloud
9 Company or were they made by employees of P.G.&E. Co.?

10 MR. ANDERSON: They were made by P.G.&E. to
11 the best of my knowledge.

12 MR. FAULKENBERRY: Thank you.

13 MR. ANDERSON: All right, I have in front of
14 me now copy 5 of the first draft and it contains a
15 higher number of our mark ups-as it appears, we used
16 this copy mostly for our working copy.

17 Starting on page 2, we added under objective
18 and scope, we initially had 3 separate items that we
19 changed -- we added two items at the first, insure that...
20 applied, that was number one and number two, chart the ...
21 chain, and number three, review ... the information
22 specifically.

23 The next change is on page 46 where in the
24 third paragraph we state that the following procedure
25 will be followed and it was added by Cloud engineers on a

1 sampling basis.

2 The next page is on page 55 where I wrote,
3 replace with attached text and circled three sections on
4 that and the following page, sections 3.3.7.6.1, .2 and
5 .3 and on the following page I also wrote replace with
6 attached text.

7 Now, I believe myself, I wrote the text to
8 replace this. This was just to facilitate the typing
9 of draft 2.

10 Now the next point is on page 57 where we have
11 a few comments here. The second paragraph, there are
12 couple of words that have been lined out -- sample checking
13 is lined and above it random sampling. That was performed,
14 that change was done by one of our engineers and also the
15 notes with the arrow stating not always the case, HBAC
16 and HBAC being underlined, that was also one of our
17 engineer's marks.

18 The next change was on page 61 and we gave
19 the conclusion section, 5.0 again. Right above it,
20 we changed once again, we marked out information communica-
21 tions and put information communications and we also had
22 a new section of text which we marked a star, insert here
23 and we clouded that little mark.

24 We also provided the text to be inserted there.
25 That was written by Cloud engineers; oh, and the one little

1 note here -- the conclusion -- under the word conclusion
2 we have a don't underline which is just so -- we were
3 trying to format it consistent with the rest of the
4 report and to my knowledge, taking a quick review of
5 these three copies of draft 1, these are the only changes
6 that I see that I can be sure that we at Cloud Engineers
7 are responsible for.

8 MR. SHACKLETON: Thank you very much,
9 Mr. Anderson.

10 Dr. Cloud, do you have anything further
11 you'd like to say?

12 DR. CLOUD: No, thank you for the opportunity
13 to add this additional informational.

14 MR. SHACKLETON: Speaking on behalf of the
15 Commission, I greatly appreciate your waiting a couple
16 of hours here to come back to do this transcription and
17 with -- just one last word of caution, Paul, which I
18 didn't tell you at the beginning, we would appreciate that
19 all the testimony that you have knowledge of that you
20 keep to yourself and it not be discussed with persons
21 outside this room.

22 With that, we'll bring this interview to
23 a conclusion. The time is now 12:32 p.m.

24 (Whereupon, at 12:32 p.m., the hearing was
25 recessed, to reconvene later this same day, Wednesday,
December 16, 1981.)

1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

3
4 INVESTIGATION OF
5 DIABLO CANYON UNITS 1 & 2

6 INTERVIEW OF
7 ROBERT L. CLOUD

8
9 Pacific Gas & Electric
10 Headquarters Offices
11 Law Department Conference Room
12 77 Beale Street
13 San Francisco, California

14 Thursday,
15 December 17, 1981

16 The above-entitled matter came on for further
17 hearing, pursuant to adjournment, at 1:37 p.m.

18 APPEARANCES:

19 On behalf of the NRC Staff:

20 OWEN C. SHACKLETON, JR., Moderator
21 B. H. FAULKENBERRY
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ERRATA SHEET

Interview of R. L. Cloud, December 17, 1981

The following correction should be made:

- ° Page 52, Line 21 - Change some to so.

The above corrections have been identified by Bobby H. Faulkenberry and Dr. R. L. Cloud

P R O C E E D I N G S

1:37 p.m.

MR. SHACKLETON: This is December 17th, 1981.

The time is 1:36 p.m.

This is a continuance of the interview of Dr. Robert L. Cloud and the interview is taking place in room 3101 of the corporate headquarters of Pacific Gas and Electric Company at 77 Beale Street, San Francisco, California.

Dr. Cloud, after the interview of December 16, 1981, has some additional information that he wishes to furnish to the commission to help clarify his testimony.

Dr. Cloud, you understand that you are still under oath as it was administered to you yesterday?

DR. CLOUD: Yes.

MR. SHACKLETON: Thank you.

And you also understand that you are entitled to have your personal legal counsel present if you so desire?

DR. CLOUD: Yes.

MR. SHACKLETON: Thank you. I'll turn the questioning over now to Bobby H. Faulkenberry, Chief of Reactor Construction Projects Branch, from the U.S. Nuclear Regulatory Commission, Region 5 and my name is Owen C. Shackleton, Jr., and I am the Senior Investigator at

1 Region 5.

2 Whereupon,

3 ROBERT L. CLOUD

4 having been previously duly sworn, was recalled as a witness
5 herein and was examined and testified as follows:

6 MR. FAULKENBERRY: Dr. Cloud, for the record,
7 please relate what transpired on December 16th, 1981
8 after your interviews with us when you returned to your
9 office and went through your files of the work you are
10 doing for PG&E on seismic reverification of Diablo Canyon.

11 DR. CLOUD: When I returned to my office, the
12 messenger from the NRC was waiting for me to pick up the
13 documentation that we had discussed earlier in the day.

14 He specifically came to get copies of our
15 contract with PG&E and two copies of the report which had
16 been sent on October 26th which I had referenced in my
17 discussion Tuesday morning, so when I came in the office
18 and found him waiting there, we immediately went back to
19 the files and got out our information so that we could
20 make copies.

21 In some doing, I found out that one of the
22 October 26th drafts was in fact dated November 6th so
23 immediately I realized that something was wrong -- I realized
24 that something that I had -- somehow had been in error in
25 the morning and my facts were different than I had related

1 them, so we went through all of our files and then through
2 the secretary's files and finally set the matter straight
3 and at that moment, I telephoned Jess Crews and explained
4 the situation to him and wrote a letter of transmittal
5 that explained all of the things that we had and all of
6 the things that we were giving your messenger and also
7 as best we could figure out, why, I had been misled when
8 I went through the files on Tuesday.

9 MR. FAULKENBERRY: If I may interrupt for just
10 a moment, DR. Cloud, just for the record, Jess Crews, I would
11 like to identify him as a member of the Nuclear Regulatory
12 Commission who is located in the Region 5 office.

13 If you would continue, please.

14 DR. CLOUD: Okay, what I found was this.

15 I found that instead of having two copies of
16 the October 26th draft, in fact, I only had one copy of
17 the October 26th draft that contained comments.

18 However, I found that we had transmitted
19 with a cover letter dated November 5th, we had transmitted
20 a draft which was dated November 6th.

21 I found that we had two copies of that draft,
22 both of which contained comments. I also found that we
23 had transmitted four additional pages on November 6th.
24 We did not have in our files any of those returned to
25 those with comments, so in summary, the correction to the

1 record should be that we sent drafts or gave drafts to
2 Jim McCracken on October 21st, of which we had three returned
3 to us with comments.

4 We gave drafts on October 26th of which we
5 had one returned to us with comments and we gave drafts
6 on November 5th of which we had two returned to us with
7 comments and we gave four additional pages on November
8 6th which were not returned to us with comments and we sent
9 our final draft on November 12th of which none have been
10 returned to us with comments.

11 MR. FAULKENBERRY: Dr. Cloud, were there any
12 oral directions given to you or members of your staff by
13 PG&E personnel to change the contents of your reports?

14 DR. CLOUD: No.

15 MR. FAULKENBERRY: Was there any oral feedback
16 that you received from PG&E in addition to a written comment
17 that you just described on the draft reports for other
18 information which you submitted to PG&E?

19 DR. CLOUD: No oral comments were given to me
20 personally.

21 However, I discussed this question with members
22 of our staff and oral comments were given to at least two
23 of our engineers.

24 MR. FAULKENBERRY: Can you generally describe
25 what these oral comments related to?

1 Did they relate to a specific draft that you
2 identified and generally explain the extent of the oral
3 comments involved?

4 DR. CLOUD: I cannot go into a lot of detail
5 on that but I know that oral comments were given to our
6 engineer who was working on the issue of qualification of
7 electrical equipment and these comments were related to that
8 area.

9 It's our understanding that -- it's my
10 understanding --

11 MR. FAULKENBERRY: Would you stop?

12 Off the record.

13 (Playback of recording.)

14 MR. FAULKENBERRY: On the record.

15 DR. CLOUD: It's my understanding that those
16 particular comments were related to the November 5th
17 draft.

18 Comments were received on the electrical
19 conduit supports on probably all three drafts that we
20 received comments on.

21 MR. FAULKENBERRY: Do you know whether or
22 not these verbal comments that were received by your
23 people resulted in changes to the draft reports?

24 DR. CLOUD: I can't say for sure at the moment
25 but I'm sure that insofar as new facts were revealed, that

1 changes consistent with those facts would have been made.

2 MR. FAULKENBERRY: Dr. Cloud, that concludes
3 the questions that I have. Owen, do you have anything
4 to add?

5 MR. SHACKLETON: I have no further questions.

6 Dr. Cloud, I remind you again, please for your
7 cooperation in not to discuss this testimony outside of
8 this room.

9 That's the end of this interview other than if
10 you would have any other information you would like to
11 provide?

12 DR. CLOUD: I'll probably think of something
13 after I leave the room but I don't now.

14 MR. SHACKLETON: All right. Thank you, Dr. Cloud.
15 We'll close this interview then at 1:48 p.m.

16 DR. CLOUD: This is your package.

17 MR. SHACKLETON: I appreciate your coming over.

18 DR. CLOUD: I really feel bad about this.

19 MR. SHACKLETON: Well, you know, if we all have
20 to recall -- you've been working under real pressure and
21 then this adverse publicity, you know, we're all human
22 beings and we understand.

23 If I had to go back a month and try and tell
24 people phone calls and what-not that went on, we'd all
25 have trouble.

1 It's even worse in your case where you're trying
2 to construct a technical report under pressure of time.

3 MR. PAULKENBERRY: What is Dick Bettinger's
4 title?

5 DR. CLOUD: He's the Chief Civil Engineer.

6 MR. FAULKENBERRY: So he's the same level
7 as Rocca? Except on the civil engineering side?

8 DR. CLOUD: Bettinger is the Chief Civil,
9 Rocca is Chief Mechanical, Herrera is Chief Electrical.

10 MR. SHACKLETON: Okay, thanks Bob. Thank you
11 very much, Doctor.

12 DR. CLOUD: Okay.

13 MR. SHACKLETON: If we don't see you before
14 Christmas, have a merry one.

15 (Whereupon, at 1:50 p.m., a short recess was
16 taken.)

1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

3
4 INVESTIGATION OF
5 DIABLO CANYON UNITS 1 & 2

6 INTERVIEW OF
7 ROBERT L. CLOUD

8
9 Offices of
10 Robert L. Cloud Assoc., Inc.
11 125 University Avenue
12 Berkeley, California

13 Tuesday
14 January 5, 1982

15 The above-entitled matter came on for further
16 hearing, pursuant to adjournment, at 2:02 p.m.

17 APPEARANCES:

18 On behalf of the NRC Staff:

19 OWEN C. SHACKLETON, JR., Moderator
20 PHILIP V. JOUKOFF
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ERRATA SHEET

Interview of R. L. Cloud, January 5, 1982

The following corrections should be made:

- Page 65, Line 3 - Change shoud to should.
- Page 67, Line 8 - Change BEthesda to Bethesda.

The above corrections have been identified by Owen C. Shackleton Jr.

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DR. CLOUD: Yes.

MR. SHACKLETON: Do you waive that right?

DR. CLOUD: Yes.

Whereupon,

ROBERT L. CLOUD

having been previously duly sworn, was recalled as a witness herein and was examined and testified as follows:

MR. SHACKLETON: Dr. Cloud, the first part of this interview today I am going to address some questions concerning the contract that you presently have with the Pacific Gas and Electric Company, and this specific contract on the document is identified as "Units 1 and 2, Diablo Canyon Site, Consultant Services for Hosgri Seismic Reverification Program, Request for Services No. 5-68-81." This contract is dated December 1, 1981.

For the benefit of those persons who will be reading this transcript, by way of background, recalling from Dr. Cloud's prior testimony, and Dr. Cloud, please correct me anytime I am in error, as I am going by recollection, but initially Dr. Cloud's involvement with this reverification program began from the discovery on September 27, 1981 by one of the PG&E engineers of a seismic error design in the Diablo Canyon plant. Shortly thereafter, during the latter part of September of 1981, PG&E contacted Dr. Cloud and asked him to tell them what his firm might be able to do to

1 determine whether or not there were any additional errors in
2 the seismic design of the plant. Dr. Cloud had done prior
3 work for PG&E on the systems interaction program for the
4 Diablo Canyon plant and therefore he and his work were known
5 to the company.

6 After this request, Dr. Cloud proceeded to
7 analyze the situation and prepare a program for the reveri-
8 fication study. Dr. Cloud attended on October 9, 1981 a
9 meeting held in Bethesda, Maryland, between PG&E, management
10 personnel of NRC concerning the seismic reverification study
11 to be done at the Diablo Canyon plant. At that time, Dr.
12 Cloud made a presentation of how he planned to approach the
13 reverification study. His program was accepted by PG&E and
14 upon return to his office in Berkeley, California, on Octo-
15 ber 11th, 1981, he and his staff began an intensive study
16 of the reverification of the design, seismic design of the
17 plant.

18 At this time, Dr. Cloud proceeded without a
19 written contract with PG&E. A written contract was not
20 drawn up until later in December, and Dr. Cloud and his
21 staff earnestly worked to get their program completed for
22 at that time PG&E had hoped to reload the core on October 31,
23 1981. After getting into the reverification study and the
24 amount of work that was involved, eventually a written con-
25 tract, as I have addressed before, was brought -- was brought

1 together and was signed by Dr. Cloud for his company and
2 for PG&E by Mr. Philip Crane, Legal Counsel for PG&E.

3 Dr. Cloud, is that correct in its chronology?

4 DR. CLOUD: Yes.

5 MR. SHACKLETON: At this time, having that back-
6 ground, I am going to address some questions concerning the
7 written contract.

8 Under the section 1.0 with the caption "Miscel-
9 laneous Requirements," subsection 1.1, which I will read
10 for the record: "Services performed by Consultant pursuant
11 to PG&E's authorization but before execution of this request
12 for services shall be considered as having been performed
13 subject to the revisions of this request for services."

14 Dr. Cloud, the question regarding that section
15 of the contract is: what does that paragraph 1.1 mean as it
16 relates to the work you performed prior to December 1, 1981?

17 DR. CLOUD: Well, as far as I am concerned, this
18 paragraph is a statement that the services we performed
19 prior to the date of the contract relative to this particular
20 effort would be reimbursed.

21 MR. SHACKLETON: All right. Thank you.

22 Dr. Cloud, from prior contract that you had with
23 Pacific Gas and Electric Company, is this particular sub-
24 section of the contract, as if -- the same as you've had on
25 other contracts?

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DR. CLOUD: A --

MR. SHACKLETON: Can you recall?

DR. CLOUD: No. It -- the previous contract that we had with PG&E, we do not find a specific list -- oh, just a minute. I have, I have the specific list of miscellaneous requirements and the first paragraph reads essentially identical to the paragraph that we just read.

MR. JOUKOFF: Is this the same contract or a different contract, Doctor?

DR. CLOUD: Now, this is a contract that we had for the system interaction study.

MR. SHACKLETON: When was that contract dated, Dr. Cloud?

DR. CLOUD: January 25, 1980.

MR. SHACKLETON: All right. Going on to the second question, Dr. Cloud, this relates to the same section of the contract, 1.0, "Miscellaneous Requirements," subsection 1.3: "Consultant shall disclose no information to third parties concerning the services performed under this request for services without written permission from PG&E."

The question, Dr. Cloud, is what does paragraph 1.3 mean to you?

DR. CLOUD: Well, it means exactly what it says. On this particular effort, however, it was necessary for us to disclose information to the NRC, which we did, and which

1 we did under verbal authorization. And the -- this clause
2 was essentially waived to permit us to, to discuss our work
3 with the NRC. I should add also, however, that it's not
4 uncommon for -- when consulting work is done on a nuclear
5 power plant and particularly if it's of a advanced scientific
6 nature, that the consultant would wish to write a paper, a
7 technical paper on the work that he did. And, as a general
8 rule, these clauses are included to permit the sponsor, that
9 is to say, PG&E, to approve any papers that subsequently
10 result from the work. That -- that's the main reason for
11 these kind of clauses.

12 MR. SHACKLETON: Thank you, Dr. Cloud.

13 MR. JOUKOFF: And just a clarification, that would
14 be a paper put out to publication to the industry or is it
15 a report to the company?

16 DR. CLOUD: There'll always be a re -- or nearly
17 always, there's a report to the company. But if the work
18 that was done carries specific scientific interest, a paper,
19 you know, of the nature of this --

20 MR. JOUKOFF: Something that would go in "Trans-
21 actions of ASME," like.

22 DR. CLOUD: Or something like that. And the, and
23 the sponsor would like to approve those kinds of papers.

24 MR. JOUKOFF: Thank you, Dr. Cloud.

25 MR. SHACKLETON: Going on to the third question,

1 under the same 1.0 "Miscellaneous Requirements" heading,
2 subsection 1.9: "Consultant is an independent contractor
3 and not an employee of PG&E in any respect whatever."

4 The question concerning this subsection is: what
5 does paragraph 1.9 mean to you?

6 DR. CLOUD: Well, once again, this statement is,
7 is not ambiguous. It means to me what it says, that I am an
8 independent contractor and that I am not an employee of PG&E,
9 which is a true statement.

10 MR. SHACKLETON: Thank you, Dr. Cloud.

11 The next question relates under the heading
12 "Specification for Consultant's Quality Assurance Program"
13 and under the subheading 3.0, "Documents for Submission"
14 subsection 3.3, which reads as follows: "Significant condi-
15 tions requiring corrective action shall be reported to PG&E
16 for concurrence."

17 The question, Dr. Cloud, is: what does this
18 paragraph mean as related -- what does this paragraph mean
19 as related to your findings from your reverification effort?

20 DR. CLOUD: Well, this paragraph says that if I
21 believe that some physical change within the plant is re-
22 quired or some change to the way the plant is operated is
23 required, that PG&E must concur with this recommendation.
24 It dawns on me that to a certain degree the statement is
25 unnecessary in this contract because PG&E holds the license

1 for the plant and they would have to agree with and support
2 any changes made at the plant in any event.

3 MR. SHACKLETON: Dr. Cloud, thank you for you comments
4 on the contract. Now I wish to address another subject matter
5 and this concerns from the testimony that you and others have
6 given to the Commission relating back to the meeting that you
7 and members of the Pacific Gas & Electric's management staff
8 attended in Bethesda, Maryland on November 3rd, 1981 with the
9 Nuclear Regulatory Commission. And the question revolves around
10 your return trip by air from Washington, D.C. to San Francisco.
11 When you returned by plane, do you recall who was present on
12 the aircraft that accompanied you or that you flew with from
13 PG&E?

14 DR. CLOUD: I can't say all of the PG&E people that
15 were on the plane with me. As I recall, we divided into two
16 groups for the return flight. My memory is that both on the
17 flight out and on the flight back, you know, half the people
18 went on United and half the people went on TWA. And I just
19 don't remember all of the people that were on the flight
20 with me.

21 MR. SHACKLETON: Dr. Cloud, on the return flight,
22 were you seated with someone from PG&E?

23 DR. CLOUD: Yes, I rode back side by side with Mike
24 Tresler.

25 MR. SHACKLETON: And for the record, Mr. Tresler

1 is the Diablo Canyon supervising pipe coordinator, an engineer
2 on the staff of Pacific Gas & Electric. Dr. Cloud, do you
3 recall that Mr. James V. Rocca was also present on that flight?

4 DR. CLOUD: Yes, he was.

5 MR. SHACKLETON: And for the record, Mr. Rocca is the
6 chief for mechanical and nuclear engineering for Pacific Gas
7 and Electric. Do you recall, Dr. Cloud, any conversation that
8 took place when Mr. Rocca left his seat and came back to where
9 you and Mr. Tresler were sitting, and in the area there where
10 you were sitting on the plane, engaged in conversation with
11 Mr. Tresler?

12 DR. CLOUD: Jim Rocca did come back and talk with us.
13 We were talking about irrelevant subjects. Then I left -- my
14 memory is that I left and Jim Rocca took my seat. I talked to
15 someone else, did some other things, and then I came back, and
16 basically sat on the edge of the table. And Jim and Mike
17 Tresler were in conversation, a fairly heated conversation, as
18 I recall, and I don't remember all the details of the conversa-
19 tion -- in fact, I don't even remember the main thrust of it.
20 But I do believe that it revolved around the fact that Rocca
21 was upset with the attorney, Bruce Norton, related to some of
22 the things that he said either in the meeting or after the
23 meeting.

24 MR. SHACKLETON: Dr. Cloud, can you recall specifically
25 what comments that Mr. Norton made that Mr. Rocca was discussing

1 with Mr. Tresler?

2 DR. CLOUD: No, I really can't go beyond that. You
3 must remember that we were in a reasonably relaxed frame of
4 mind at the time and I certainly wasn't interested in rehashing
5 the events of the two or three days preceding.

6 MR. SHACKLETON: Dr. Cloud, do you recall were there
7 any other PG&E members of their engineering staff present
8 during this discussion between Mr. Rocca and Mr. Tresler?

9 DR. CLOUD: I do not believe so. My memory is that
10 Mike and Jim were seated side by side, with Rocca in my chair
11 and I was sitting on the edge of the table, and I don't believe
12 there were others around.

13 MR. SHACKLETON: All right. Thank you. The next
14 subject that I would like to approach, Dr. Cloud, concerns the
15 issuance by your company of draft reports of what has been
16 referred to during the course of this investigation as Cloud's
17 preliminary report or interim report. The final preliminary
18 report, I believe, was issued on November the 12th of 19 --
19 October -- pardon me, November 12th, 1981. The question I
20 wish to address to you, sir, is why did you provide Pacific
21 Gas & Electric Company draft reports during the month of
22 October 1981?

23 DR. CLOUD: Well, we discussed this before, of course.
24 And I mentioned that as a matter of course we always furnish
25 a draft report on any significant piece of work that we do for

1 any and all of our clients.

2 MR. SHACKLETON: Dr. Cloud, was it your decision to
3 provide these draft reports or was it upon request by PG&E?

4 DR. CLOUD: It was definitely my decision, and it
5 wasn't even a decision. It's a matter of policy in our company.

6 MR. SHACKLETON: Thank you. Phil, do you have any
7 further questions for Dr. Cloud?

8 MR. JOUKOFF: No, I don't. Thank you.

9 MR. SHACKLETON: Dr. Cloud, do you have any additional
10 comments you would like to make regarding the questions that
11 have taken place here this afternoon?

12 DR. CLOUD: Nothing of any real relevance. I mainly
13 remember our discussion on the plane on the way back with Mike
14 Tresler and that we were talking about at that time my primary
15 interest was his salmon fishing trips, and I was a little upset
16 when Rocca came back and tried to talk business with him.

17 MR. SHACKLETON: Thank you very much, Dr. Cloud. I
18 have no additional questions at this time. And we will
19 terminate this interview at 2:27 p.m. Going off record.

20 (End of interview.)
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