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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

NRC-152

TECHNICAL REVIEW TEAM BRIEFING:

COMANCHE PEAK REVIEW

LOCATION: BETHESDA, MARYLAND PAGES: 1- 60

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

TECHNICAL REVIEW TEAM BRIEFING:

COMANCHE PEAK REVIEW

NUCLEAR REGULATORY COMMISSION

7920 NORFOLK AVENUE P-118

BETHESDA, MARYLAND

9.18.84

The Panel met, pursuant to Notice, at 1:00 pm.

NRC STAFF MEMBERS PRESENT:

- | | | |
|---------------|------------|--------------|
| T. Ippolito | L. Shao | D. Jeng |
| D. Eisenhut | R. Keimig | T. Langowski |
| J. Calvo | A. Vietti | C. Hoffmayer |
| A. Johnson | J. Collins | H. Denton |
| S. Burwell | R. Wessman | E. Case |
| J. Youngblood | S. Gagner | B. Hayes |
| J. Stefano | W. Smith | |

UTILITY REPRESENTATIVES:

- | | | |
|----------|-------------|-------------|
| J. Beck | M. Spence | J. Redding |
| L. Fikar | B. Clements | N. Reynolds |
| | J. George | |

OTHERS PRESENT:

- | | | |
|------------|--------------|------------|
| H. Schmitt | R. Hutcheson | R. Philleo |
| J. Landers | J. Saloto | H. Levin |

1 P-R-O-C-E-E-D-I-N-G-S

2 MR. EISENHUT: I'm Daryl Eisenhut, the
3 Director of Licensing of the NRC.

4 Let me give a couple of introductory
5 comments before I turn the meeting over to Tom
6 Ippolito of the Staff.

7 As many of you know, we have had a quite
8 extensive effort underway in terms of a review that
9 has been going on down at the Commanche Peak site now
10 for several months. The origin actually dates back as
11 far as something like April of this year and we got on
12 it in earnest later on this year.

13 That review has now progressed to the point
14 where much of the work at the site is complete. Today,
15 we are actually sending you a letter addressed to Mr.
16 Spence. A letter setting forth some questions we
17 have; it's written in the form of a request for
18 additional information.

19 Has that been passed out yet?

20 MR. IPPOLITO: Yes.

21 MR. EISENHUT: Okay. That letter is now
22 available to the meeting.

23 What we'd like to do today is go through and
24 describe where we are on the one portion of our
25 review. That is, the portion of the review that

1 covers civil structure, electrical instrumentation and
2 control matters and the test program matters.

3 The issues that we have identified are
4 really issues, which as I said, they're requests for
5 additional information in the sense that the ball, so
6 to speak, goes from our court to your court. We've
7 got open issues in these areas where utility action is
8 required for us to proceed forth.

9 Mr. Ippolito has been in charge of directing
10 not only the site efforts that are under way, has been
11 under way for some weeks, but Mr. Ippolito is put in
12 charge of the overall agency actions on Commanche
13 Peak. He's responsible for all facets of that.

14 As I said today, we're going to be first
15 addressing one set of those actions. That is, the
16 review team that has been at the site. And then under
17 the review team, we're going to be addressing maybe
18 three out of five subject areas.

19 We'll address, in some greater depth, those
20 areas. We'll also just point out the other areas.
21 We're just not to the point where we're ready to
22 identify things.

23 What I'd ask us to do today, is first, we
24 are keeping a transcript of the meeting. So I'd like
25 each person to identify themselves for the record.

1 We'll identify the issue, address it in some depth,
2 ask the utility if there's a question you have about
3 it. If there is things that you don't understand or
4 if there's supplemental information you'd like to add,
5 feel free to add it.

6 You ought to feel free to ask questions to
7 the extent that when you leave, you understand our
8 question or our concern as clearly as you can.

9 We do have here with us today some of the
10 key staff that did the review. So basically this is
11 -- we're (a) giving you the letter, but (b) trying to
12 have a discussion to facilitate your understanding and
13 to make sure that we can get on with your actions to
14 follow up.

15 With that, I'm going to turn the meeting
16 over to Tom Ippolito, who has been the director of
17 this for a number of weeks down at the site. And
18 he'll go through the outline of where we're going and
19 then also introduce the appropriate staff at the
20 appropriate time.

21 Tom.

22 MR. IPPOLITO: Thank you.

23 Daryl has taken away some of my
24 introduction. But I thought for a more complete
25 record, I'll go back a little ways and attempt to

1 provide you with the background that got us to where
2 we are right now.

3 First of all, as you know, I'm the project
4 director. And when I was given this assignment,
5 obviously one had to determine what his work scope was
6 and in order to lay out a plan on how to best resolve
7 and review the issues at hand.

8 So one of the first things we did was to
9 develop a plan which was approved on June 6th of this
10 year and I'm hoping that you all have had a copy of
11 this plan. If there's anyone that needs one, I think
12 after the meeting we can provide it.

13 But that plan identifies the creation of
14 what you now know as the Technical Review Team. It
15 was necessary, after looking at the workload ahead of
16 me, to determine how best to deal with the large
17 number of technical issues and allegations. The plan
18 identifies the plan that was considered best to
19 accomplish this was to create a team, a Technical
20 Review Team.

21 That Technical Review Team was assembled and
22 we -- our first visit to the site took place on
23 January 9th. And as you note -- I mean July 9th,
24 excuse me. And as you know, we've had three sessions
25 and we're currently in the fourth session.

1 And, again, just to bring you up to speed
2 again, this is the way the Technical Review Team is
3 organized. You've met some of the people, Mr. Vietti
4 and Mr. Wessman. Mr. Gagliardo is down at the site.
5 He is keeping the team moving while I'm up here. And
6 Ms. R. C Tang is also down there while we're up here
7 making this presentation.

8 As you can see, we have the five groups.
9 The electrical group headed by Jose Calvo. The Civil/
10 Mechanical headed by Dr. Larry Shao. The third group
11 is QA/QC headed by Mr. Livermore. The Coatings area
12 handled by Phil Matthews. And the Tests Programs area
13 headed by Rick Keimig.

14 The reports that you will be getting today
15 are in the electrical area, the civil structural
16 portion of this team and the tests programs. As a
17 matter of giving you a status report of where we are
18 with the other teams, Mr. Matthews reports to me that
19 he expects to complete all of his site effort during
20 this session.

21 Mr. Shao reports that up until just recently
22 he was complete with his onsite effort. But he's going
23 to have a few people on site during the fifth session.

24 In the QA/QC area, there will be a full
25 fifth session. We expect to complete our effort at

1 the conclusion of that fifth session.

2 That is not to say that everything is
3 waiting upon completion of all these efforts. We have
4 now already started drafting up the safety evaluation
5 report and people are assigned to that right now. As
6 each of these areas are completed, that will be
7 factored into the safety evaluation reports. So while
8 this schedule is taking longer than I had anticipated,
9 it's not as severe as one might think.

10 Yes, the last section going in will be the
11 QA/QC area, but much of the other will have been
12 completed.

13 I thought I would take a few minutes to try
14 to describe to you what goes into our review and as
15 you can see, it's rather extensive. First of all, as
16 you're well aware, we've been looking at and reviewing
17 your records. We have interviewed and will continue
18 to interview allegers. We have reviewed documentation
19 such as affidavits and documents provided by allegers.

20 We have, also as you know, we've been
21 talking to your staff, your principal staff, and your
22 inspectors and whatever you have, as well as those of
23 one of your contractors, Brown and Root, an element
24 that was added that we thought was necessary to add in
25 order to assure that we completely evaluate the

1 technical issues and allegations.

2 We were provided with and we reviewed the
3 depositions that have been taken as a result -- that
4 were taken as a part of the hearings on intimidation.
5 So there's information there that we are -- that we've
6 also considered.

7 We've considered the live reports, the
8 Region IV reports. We have also inspected and gone
9 and looked at the plant itself. We also have, as part
10 of the QA/QC effort, an as-built verification program.
11 I'd like to -- I have termed that -- we're actually
12 going down there and kicking the tires, if you will,
13 okay.

14 Lastly, but I think more important, is we
15 determined and we assessed the safety significance of
16 our findings.

17 Now what you will -- you will be seeing
18 shortly -- is like a tally, if you will. You will see
19 a column that says, for a certain group of technical
20 issues and allegations there are action items required
21 of you or there may not be action items required of
22 you.

23 Let's take for existence where the right-
24 hand column says "No." That doesn't -- you should not
25 construe that to mean that none of the allegations or

1 technical issues have merit. They may be correct but
2 when evaluating their safety significance, we said it
3 was not significant to safety.

4 On the other hand, where you see a "Yes,"
5 and there may 12 or 15 or 20 allegations, that doesn't
6 mean that all 20 or 15 of those allegations all were
7 found to be substantiated.

8 MR. EISENHUT: Tom.

9 In fact, when you look at the table, it's
10 actually -- let me make sure of this so we don't
11 mislead people. The yes/no column in the column that
12 Mr. Ippolito is referring to is on the next page.
13 It's actually the Applicant, whether the issue is
14 preceded to the point where any action is required on
15 your part. Even a "no" may well conclude that the
16 staff has action to follow up on either -- on the
17 team, in the region.

18 And I should have pointed out earlier, John,
19 and I apologize, John Collins, the regional
20 administrator of Region IV is here also.

21 It doesn't necessarily mean the issues first
22 resolved or that there's no NRC action required as a
23 follow up. All it really means is that there's no
24 Applicant action at this time required.

25 MR. IPPOLITO: Thank you.

1 For your information, we have already gone
2 around the room and introduced ourselves. So John was
3 introduced.

4 Fine. If there are no questions -- oh,
5 wait, there's one more thing. And, briefly, what
6 we've provided you is a -- we made a summary of the
7 number of allegations which were divided into a number
8 of categories for our review and evaluation.

9 And I think -- and correct me if I'm wrong
10 -- but the number of allegations and technical issues,
11 at the present time, runs in excess of 550. And that
12 will give you an idea when you add that up, that's
13 about 20 something percent complete. Okay.

14 At this point, I think, unless you have any
15 questions, we can start with the specific areas. And
16 we'll start with Mr. Calvo and the Electrical and
17 Instrumentation area.

18 Jose.

19 MR. CALVO: In the Electrical/
20 Instrumentation area, there were 53 allegations.
21 However, the number that it shows in here is 77. Some
22 of the allegations for the -- had some commonality, we
23 had to put them in different categories. So what we
24 did, we looked at the allegations and we said --

25 MR. IPPOLITO: We're having a hard time

1 hearing you. The mikes don't work. You'll have to
2 speak up.

3 MR. CALVO: I tried to keep myself from
4 getting close to the border here. Anyway, the -- we
5 have 53 allegations, actual allegations. And we
6 actually -- some of the allegations, they were
7 consolidated into nine categories. The same
8 allegation appears to be in several categories because
9 it has some concerns that it was common to all the
10 categories.

11 If we can take it, for instance, category
12 one had to do with electrical cable terminations. The
13 number of allegations that there were consolidated in
14 that category was 12.

15 After our review and evaluation at the site,
16 we concluded that there was some action, Applicant
17 action should be required. Not because -- not for all
18 12 allegations. Because some of the concerns
19 highlighted by the allegations that were put together
20 in some actions as a result of those allegations in
21 our review indicate in this category some action will
22 be required. And I guess later on when we get to the
23 specific actions, then you will know which ones --
24 which are the details of those actions.

25 The electrical cable tray and conduit

1 installation, after we performed our review and
2 decide, we concluded that there was no action required
3 at this time for the Applicant to pursue.

4 When we get to electrical equipment
5 separation, yes, we have some actions that will be
6 required. And we can discuss those as we go to the
7 next slide later on.

8 The same thing for electrical conduit
9 supports and the same thing for electrical QC
10 inspector training qualifications. The only ones that
11 you see that is "no" under the Applicant action
12 required show there is no current action at this time
13 has been determined by the PRPP. So we can go to the
14 next line now. We'll go into the specifics.

15 The electrical cable terminations. The
16 allegations, in essence, they characterize the
17 improper size locks, improper use of cable butt
18 splices in panels and cable terminations not
19 conforming with drawings. That was, in essence, what
20 those allegations was talking about, the concern that
21 was highlighted.

22 As a result of our review of those
23 allegations and interviewing -- talking to alleged
24 and inspecting the installation, we came up with one,
25 two, three, four, five potential open issues.

1 We found out that a lack of awareness of the
2 QC electrical inspectors to indicate in the inspection
3 report when installation of the nuclear heat shrinkage
4 cable insulation sleeves was required to be witnessed.

5 The second one was the -- we selected some
6 inspection reports and indicate -- did not indicate
7 when they require witnessing of the splice
8 installation was done. And before I go to the next
9 one, the reason we're worrying about splices is
10 because, pursuant to the regulations, we discourage
11 the use of splices.

12 Regulatory guide 175, IEEE 420 says don't
13 use the splices. But if you use the splices, you want
14 to be sure that you have done it in such a manner, in
15 a controlled manner. Be sure that you've got
16 procedures, the method that you have followed as such
17 that you have done it in a correct manner.

18 So that's the concern highlighted by the
19 allegations with respect to splices.

20 We come to the next one, the absence of a
21 splice qualification requirements and provisions in
22 installation procedures to verify operability of those
23 circuits which contain the splices.

24 We selected some cable terminations to
25 determine whether the actual installation was in

1 accordance with the drawings. We found out some
2 disagreement between the actual installation and the
3 drawings.

4 And finally, there was one allegation
5 regarding nonconformance reports concerning vendor-
6 installed terminal lugs in the General Electric motor
7 control centers. And we found out that, based on our
8 assessment of the nonconformance report, we found out
9 that the closure of the nonconformance was done in an
10 improper manner.

11 Now, samples all these things up for each
12 category, those are percented in the letter
13 documenting the Commanche Peak Review. As a result of
14 our findings, we have some actions required by the
15 Applicant.

16 The first action is to clarify the
17 procedural requirements and inspector training with
18 respect to the areas in which nuclear heat-shrinkable
19 sleeves are required on butt splices.

20 The significance of this particular issue
21 was that the shrinkable sleeves are required on butt
22 splices for just equipment that is supposed to be
23 located in a harsh environment.

24 The fact that the inspector did not check
25 the forms saying that there was none required in the

1 areas and the control room or cable spare room was a
2 lack of awareness of this particular installation.

3 What the TRT is concerned about, if it was a
4 lack of awareness in installation, how well he did it
5 on those areas where the butt splices could be
6 included in the harsh environment. So that was the
7 significance of this one.

8 The second one, we want to assure that the
9 QC inspector requiring witnessing for butt splices has
10 been performed and properly documented and verify that
11 all butt splices are properly identified on the
12 appropriate drawings and in panels.

13 The other one is, we would develop an
14 adequate installation inspection procedure to assure
15 the operability of those circuits contained in butt
16 splices, that the wiring and the butt splices have
17 satisfied -- are qualified for service conditions and
18 that the splices are not next to each other.

19 The other one, we'd like to come up, it's
20 onw for the Applicant, for you, to propose a program.
21 The program which assures that these actions are being
22 accomplished. And the action is to reinspect all the
23 safety-related and associated terminations in the
24 control room panels and in the termination cabinets in
25 the cable spreading room to verify that they are in

1 accordance with drawings.

2 Based on this program and based on your
3 findings, if we found that you found a lot of
4 nonconformance with the drawings, we want you to
5 establish the scope of the inspection effort to
6 include all the safety-related and associated
7 terminations of the Commanche Peak Steam Electrical
8 Station.

9 And finally, with regard to the
10 nonconformance reports related to the vendor-installed
11 terminal lugs in the GE motor control centers, we want
12 you to reevaluate and redispotion all the
13 nonconformance reports.

14 In essence, that finish what we had found
15 with the cable terminations. If you have any
16 questions, I will do what I can to answer them.

17 MR. CLEMENTS: You indicated that since the
18 inspectors did not look at the -- did not check the
19 inspection reports for the nuclear heat-shrinkable
20 sleeves in the areas where they weren't required, you
21 assumed that they didn't also in the areas where they
22 were required; is that what --

23 MR. CALVO: Yes. It was a procedural
24 finding. We wanted to be sure that the fact that he
25 did not acknowledge the fact that it was not required

1 in the areas of the control room and the cable room,
2 that is correct.

3 He did not check the fact that it was not
4 applicable for those areas. Therefore, the conclusion
5 that we came up with that, maybe not knowing that,
6 maybe also -- had made the same mistake and maybe pull
7 your own cable splices that could be used in the areas
8 where those splices can be used.

9 MR. CLEMENTS: Did you look in the areas
10 on that nonconformance report?

11 MR. CALVO: No, we did not.

12 I used -- it's a procedural error in the
13 inspection reports.

14 MR. EISENHUT: That's why I think it's a key
15 point here. Jose is not saying this is a -- we
16 haven't concluded this is a safety problem. That's
17 why the item underneath it is to clarify a procedural
18 requirement. Because it may well be that you can -- I
19 mean, that's why I couched this before as a request
20 for additional or clarifying information.

21 MR. SPENCE: I want to clear that up.

22 In your opening remarks you made the comment
23 that these issues that you're going to share with us
24 today are really requirements for additional
25 information.

1 Is that an appropriate definition for us to
2 assume as we go through here for this heading of
3 potential open issues?

4 MR. CALVO: If you keep in mind that in this
5 case we found funding. Because of -- the allegations,
6 in essence, prompted our area to look things up. And
7 we didn't look farther than the allegation was
8 concerned.

9 Now we found a problem with the allegations.
10 And we made an interpretation in that particular area
11 that we're looking at. And we say, "Well, if we
12 correlate this to something else on the plan, okay, it
13 could be a problem."

14 Now we stop it right there. We could go to
15 the area where the planning comes from there then our
16 review instead of being six week, we could be here,
17 you know, several months.

18 So we figured out that we found enough
19 problems in here to put, in essence, give it back to
20 you and let's say, "Okay, we found a problem. You
21 tell us whether this problem has also been propagated
22 to the other areas of the plant."

23 In essence, this was based on some random
24 techniques that we used to evaluate inspection reports
25 and picked up physical hardware.

1 MR. EISENHUT: Maybe I can help, Mr.
2 Spence.

3 I think the heading here may be a little
4 misleading. I think it would have been better perhaps
5 to say these are open questions that are pending on
6 the problem side where it says "potential open
7 issues."

8 It's more in the mode of clearly they're
9 open issues on our mind because we can't close them
10 out. But they're -- and I think this went through an
11 evolving process to the point that where they are
12 today is these are things that we concluded, based on
13 our review where we are not able to close the item
14 out.

15 Therefore, action is required on your part
16 to help close the issues. And that's really -- one
17 could look at them as -- the top part of the page is
18 the observations of what we found that raised
19 questions in our minds. And the bottom part of the
20 page is, these are actions that you're going to have
21 to take to wrap up the issue.

22 MR. SPENCE: You've given us the questions
23 and these are the actions that you feel are
24 appropriate for us to give you back the answers that
25 you need?

1 MR. EISENHUT: Right.

2 And we tried to be not too prescriptive
3 except, for example, if we concluded there is a clear
4 problem with how a procedure, with a procedural
5 requirement, the action would be to clarify the
6 procedural requirements.

7 When you look at it, you may well find a
8 technical problem but not at this point here on that
9 item as an example.

10 MR. GEORGE: If I understand it correctly,
11 the butt splices you found in the control room is
12 leading you to concern of butt splices in other
13 safety-related areas?

14 MR. CALVO: From the standpoint of the
15 nuclear heat-shrinkable insulation of the splices.
16 With regard only to that one.

17 MR. GEORGE: If you used those butt splices
18 anywhere else, would you have problems?

19 MR. CALVO: Yeah, it would be perfectly all
20 right. I'm expecting there would be none or very few.
21 And if you have very few, you can analyze it and tell
22 what is acceptable.

23 MR. GEORGE: The policy has been not to use
24 butt splices.

25 MR. CALVO: Not to have them. That is

1 correct.

2 You understand that in the situation that
3 the reason you have them in the cable spreading room
4 because as human factors changes became --

5 MR. GEORGE: That's for us --

6 MR. CALVO: It still doesn't justify the
7 fact that you have them. The question is if you have
8 them, it has to be done in the control manner.

9 MR. GEORGE: Thank you.

10 I understand.

11 MR. EISENHUT: So the issue isn't
12 necessarily, as it was said, a technical safety
13 problem in the hardware sense.

14 And as Jose said, we may -- we don't expect
15 there to be lots of butt splices. And we expect you
16 could probably look at those. But, still, we would
17 put this on the list of albeit it may well be a minor
18 or whatever size procedural error.

19 MR. GEORGE: Yes, I understand.

20 MR. EISENHUT: So we'll be accumulating
21 those on a second list --

22 MR. GEORGE: Thank you.

23 MR. EISENHUT: -- which goes into the middle
24 bag, I guess.

25 MR. CALVO: The next category we found

1 there's some actions we would require by the
2 Applicant. It has to do with the electrical
3 separation.

4 And we found four main areas of concerns.
5 And one was the numeral cases of safety-related cables
6 within flexible conduit inside the main control panel
7 that did not meet minimum separation requirements.
8 Also, no evidence of the analysis being performed
9 would justify this lack of separation.

10 Second, there were several cases of safety
11 and nonsafety-related cables and nonsafety-related
12 cables inside flexible conduit, once again, was
13 touching against each other. Again, they did not meet
14 minimum separation requirements. No evidence also was
15 found that analysis was performed to justify this lack
16 of separation.

17 The reason I'm saying no analysis has been
18 performed is the fact that if you look at the IEEE 384
19 as augmented by Reg. Guide 1.75, allows you to say if
20 you don't meet the separation as stated in those
21 documents, you can justify the proposed installation
22 by analysis. And that analysis include tests.

23 We have no documentation to justify that
24 lack of separation.

25 Now the third one concern that we found was,

1 we found that some analysis substantiating the
2 adequacy of the criteria for separation between
3 conduits and cable trays by the unit there. You had
4 those analysis was available. But it had never have
5 been forwarded to the NRC for review.

6 And all we're asking here, in essence, is
7 for you to submit those analysis to the NRC so the NRC
8 can review them and determine whether he agrees or
9 disagrees with you on how your separation criteria was
10 established.

11 And last, incidental to this generic review
12 that we did, we found two minor violations with regard
13 to the separation inside panels. I think it's simple
14 so the basis is included in the Comanche Peak Review
15 letter that you -- it was handed to you at the
16 beginning of the meeting.

17 And the other one has to do with a redundant
18 field wiring not meeting the minimum separation.
19 Those concerns require actions by the Applicant.
20 Those actions, first, is to reinspect all the panels
21 of the Comanche Peak Steam and Electrical Station that
22 contains safety-related cables within conduits or
23 safety or no safety-related cables within conduit and
24 either correct each violation of the separation
25 criteria or demonstrate by analysis that the

1 separation that you have is adequate.

2 And the second one, to reinspect all the
3 panels at Comanche Peak Steam and Electrical Station
4 and either correct each violation or substantiate by
5 analysis that the installation that you have is
6 adequate.

7 The third one is to submit those analysis
8 that you have to the NRC so the NRC can review them
9 and determine whether they are acceptable for the
10 separation criteria that you had used.

11 And last, correct the minor violation of the
12 separation criteria inside the panels. Now samples of
13 these findings are in the letter that you have. These
14 samples are not all -- they give you an idea of what
15 kind of the problems are.

16 Do you have any questions with this
17 particular category?

18 MR. SPENCE: By samples, do you mean
19 specific locations?

20 MR. EISENHUT: Yeah, but we didn't try to
21 list all the findings -- all the places where we found
22 the problems.

23 MR. SPENCE: Sure.

24 MR. EISENHUT: We listed enough that we
25 thought was representative of the problems that your

1 people were going to find. And I guess this is a
2 follow up of our previous discussion.

3 As you go through each of these you'll find
4 there are different kinds of events or situations. In
5 this one we felt there was a physical hardware
6 question, that is the separation between the cables.
7 You can obviously show that they've either been
8 analyzed, are acceptable and show us that
9 documentation.

10 You could go in and provide separation.
11 There's a number of ways you could approach the
12 problem. But as you go through you'll see the
13 different issues or the different questions as we've
14 identified them exhibit themselves in different ways.
15 Some are procedural. Some are hardware. Some are
16 analysis situations.

17 I think you can see the different concern or
18 the different level of types of concern we have.

19 MR. CALVO: If you are finished with this
20 category we can go to the next one that concerns
21 with the electrical conduit supports and this was,
22 particularly, one particular allegation immanenting
23 from one particular allegation that is concerned with
24 the dry wall and the conduit and the lighting above
25 the panels in the control room.

1 And this particular issue was purely work
2 between the electrical team and the mechanical team.
3 and Dr. Larry Shao will discuss this on his
4 presentation later on.

5 As a result of the electrical team looking
6 into the electrical aspects of this allegation in the
7 control room and identifying some problems regarding
8 meeting seismic requirements the electrical team felt
9 that we should go to some other areas of the plan and
10 determine whether the same kind of problems or the
11 same kind of signs were in other areas of the plan.

12 We then went to all the Seismic Category I
13 areas and we found out that we can't do it without
14 less than two inches or equal to two inches in
15 diameter, which did not appear to be not -- didn't
16 have the proper seismic supports similar to the one
17 that we had found out in the control room.

18 We requested analysis that -- on account we
19 did found this analysis. We referred all of this
20 matter to the seismic team for them to look at and you
21 will hear more about the evaluation that goes one step
22 forward from the one that we had done today -- that we
23 don't have presented here today.

24 So if you will be patient and wait until Dr.
25 Larry Shao comes out I think you can ask any questions

1 and maybe we can both jointly answer to you at that
2 time.

3 So we can go to the next slide. And this is
4 the following slide in the electrical instrumentation
5 categories which show actions that are required from
6 the license, from the Applicant.

7 We did -- we reviewed the load of the
8 qualification training file. We talked to some of the
9 quality control, QC, inspectors and training personnel
10 supervisors. And as a result of our evaluation we
11 came to these findings. The four concerns are
12 reflected in our review.

13 One was the lack of supportive documentation
14 on personnel qualifications in the training and
15 certification files; lack of guidelines in procedural
16 requirements for the electrical QC inspector testing
17 program; lack of documentation for assuring that the
18 requirement for electrical QC inspector
19 recertification were being met.

20 I would like to put another slide there that
21 I have as a back up the slide that is going to give
22 you some of the concerns in some of the areas that we
23 found and --

24 MR. CLEMENTS: You are going to have to
25 read.

1 MR. CALVO: Okay.

2 Well, anyway some of the areas that we had
3 found out was one case of not documentating
4 documentation of a high school diploma or a General
5 Equivalency Diploma was found -- was missing.

6 One case no documentation to waive the
7 remaining of two months of the required one year
8 period.

9 I think you have these things -- those are
10 covered in the letter that was given to you. In one
11 case where the QC technician had not passed the
12 required color vision examination administered by the
13 professional eye specialist. A make-up test using
14 colored pencils was administered by the QC supervisor,
15 was passed and then the waiver was given.

16 Two cases where the experience requirements
17 to become Level I technicians were only met
18 marginally.

19 One case of no documentation in the training
20 and certifications files substantiating that the
21 person met the experience requirements.

22 Those are just a sample of the things that
23 we have found.

24 Now with regard to the lack of guidelines
25 and procedural requirements for the electrical QC

1 inspector testing program, some of the findings were
2 no time limit or additional training requirements
3 existed between your failed test and retest.

4 No controls existed to assure that the same
5 tests would not be given in a taker previously failed.
6 The same test had been utilized for the last two
7 years.

8 No guidelines or procedural orders are
9 available to control this qualification or questions
10 from a test and no consistency existed in test
11 scoring.

12 This is some of the samples of the findings
13 that we found in our review of electrical QC
14 inspector.

15 As a result of these findings we feel that
16 the following actions are required by the Texas
17 Utility Electric Company.

18 One, to review all the electrical QC
19 inspector training, qualification, certification and
20 recertification files against the project requirements
21 and provide the information in such a form that each
22 requirement is clearly shown to have been met by each
23 inspector.

24 Now if an inspector is found to not meet the
25 training, qualification, certification or

1 noncertification requirements, the Applicant shall
2 then review the records to determine the acceptability
3 of inspections made by the unqualified individuals.
4 And provide in a statement of the impact of the
5 deficiencies noted on the safety of the project.

6 What we are trying to do -- if you have an
7 unqualified inspector there doing -- actually
8 witnessing safety -- installation we want to be sure,
9 if he is unqualified, how good the safety
10 installations are.

11 Now, the next one is to develop a testing
12 program for electrical QC inspectors which optimizes
13 administrative guidelines, procedure requirements and
14 test flexibility to assure that suitable proficiency
15 is is achieved and maintained.

16 We did, in this interview of the QC
17 electrical inspector, we went one step beyond the
18 paperwork. We did -- we asked him some questions, if
19 you happen to go on the plane and you found this kind
20 of problem with the electrical separation or
21 electrical termination, some of them answered
22 satisfactorily, others, they need to go back to the
23 procedures, others; they answered unsatisfactorily. So
24 it was a mix motion in there about the knowledge of
25 the inspectors.

1 And, again, important with this particular
2 action in here this is the electrical input and all of
3 the qualification and training program. It is a big
4 program -- review -- on the overall training program
5 for all the other disciplines; ASME included. And
6 this should be coordinated, should be coupled with the
7 program I reviewed for the QA/QC and maybe a joint
8 effort to correct the situation should be proposed to
9 ANC.

10 MR. CLEMENTS: Did you say that there were
11 mixed emotions on the part of the inspectors whether
12 or not the training was adequate or not after talking
13 to the inspectors?

14 MR. CALVO: Yes.

15 MR. COLLINS: Mixed responses.

16 MR. CLEMENTS: What?

17 MR. COLLINS: Responses.

18 MR. CALVO: Yes, some of them responded to
19 our questions correctly; others responded incorrectly.

20 MR. CLEMENTS: I see.

21 MR. CALVO: They could very well say, "Let
22 me get my procedures and I can tell you how -- I can
23 answer your question." They did not want to do that
24 and they volunteered a response right there.

25 But anyway, these are some of things that we

1 did to reach -- to come up with those findings and
2 this is the action that we feel that is required at
3 this time to correct them.

4 If you have no more questions that finishes
5 my presentation with the electrical/instrumentation
6 area.

7 MR. EISENHUT: I had one.

8 MR. CALVO: Sure.

9 MR. EISENHUT: How many people of the
10 electrical -- of QC inspectors, how many did you
11 either talk to or look at records, et cetera, in
12 association with in coming to this conclusion?

13 MR. CALVO: I think we looked at -- about
14 all the records, we had print-out. We selected six or
15 seven. We also even selected some people -- we talked
16 to them from the standpoint of training. We talk to
17 the from the standpoint of following procedures. So
18 it was in view of about six or seven people.

19 Most of the ones that we wanted to talk,
20 they were not available on the site. Some of the
21 allegations concerned former QC electrical inspectors
22 that were not available and we had to reach them in
23 some other way. But we could not do it at the time.

24 MR. SPENCE: Mr. Calvo, you say in some of
25 the records you looked at that applied to employees

1 that had left.

2 MR. CALVO: In some of the records that we
3 looked at it had applied to an employee that had left,
4 that is correct. The ones that we interviewed, that
5 was the one that was there.

6 MR. EISENHUT: The point I was making is
7 there is quite a number of people, on records at
8 least, that and in addition to that we actually talked
9 to some QC inspectors on the site.

10 MR. CALVO: Yes, that is correct.

11 MR. CLEMENTS: I have a question.

12 It says, "Provide the information in such a
13 form that each requirement is clearly shown to have
14 been met by each inspector." I guess we are talking
15 about historically also?

16 MR. CALVO: Yes, that is correct.

17 MR. CLEMENTS: The ones on site now?

18 MR. CALVO: Because it has to do with
19 installation of the nuclear power plant and the safety
20 installation. If the installation was put there three
21 years ago you got to look at whether the inspector at
22 that time was qualified.

23 I mean it doesn't meet the purpose if you
24 talk to the one that you have there to make your claim
25 complete if he has only been working there for a very

1 few months.

2 You got to go back -- you can almost relate
3 the inspector back to the installation that he
4 inspected.

5 If you are finished with the questions I
6 would like to give this back to Dr. Larry Shao who is
7 going to continue with the presentation of the
8 mechanical and instructional aspects of TRT program.

9 MR. SHAO: In the civil/structural area
10 there are altogether 56 allegations. The subjects are
11 mostly related to alleged steel and concrete
12 construction deficiencies.

13 Certain allegations are related to seismic
14 design adequacy and falsification. Out of these 56
15 allegations we have found five allegations may be
16 valid and they may have potential safety significance.

17 I am going to discuss each issue that may
18 require -- that will require Applicant's action.

19 The first issue is missing rebars. The
20 construction of the reactor cavity wall reaching
21 elevation 812 feet and 819 feet was in accordance with
22 revision two of the drawing 2323-S1-0572. The
23 revisions three of the same drawing which was issued
24 later showed substantial increase in rebars.

25 Some of the omitted rebars were placed in

1 the next lift. The technical -- request calculations
2 justify the missing rebar. The Applicant did not seem
3 to have the calculations, they only show us a letter.

4 We feel we cannot evaluate the safety
5 significance of this incident until we review the
6 calculations of the as-built conditions. The
7 Applicant should provide the calculation to verify the
8 adequacy of rebar in this area. The calculation
9 should include all design load combinations.

10 Do you have any questions on this issue?

11 MR. SPENCE: Did I understand you to say
12 that we did or did not give you a letter in response
13 to this during your investigation on site?

14 MR. SHAO: During the investigation we
15 requested calculation and your people cannot produce
16 the calculations.

17 MR. SPENCE: But they did return the letter.

18 MR. GEORGE: Are you looking for a finite
19 element analysis?

20 MR. SHAO: No, no, no, no.

21 MR. GEORGE: No?

22 MR. SHAO: I'm looking for some calculations
23 that you got as your conditions. It doesn't have to
24 be a finite analysis.

25 MR. COLLINS: They're just looking for the

1 calculations.

2 MR. SHAO: They gave me the good solid
3 calculations, it doesn't have to be --

4 MR. WESSMAN: What we saw was the Gibson-
5 Hill letter that said it was okay but there was
6 nothing attached to that letter that justified the
7 assertion in the letter.

8 MR. SHAO: The next issue is falsification
9 of concrete compression strength test results. It was
10 alleged that concrete compression strength test
11 results were falsified. The Technical Review Team
12 could not prove this allegation to be valid or
13 invalid. We considered this issue as very, very
14 important for two reasons.

15 First, concrete compression test results are
16 used in determining the structure -- integrity of the
17 major structure. And also a lot of other allegations
18 such as falsification of air content test results,
19 falsification of concrete strength test results and
20 too long a time in the concrete mixers. There deemed to
21 be not important by siting acceptable concrete
22 compression strength test results. And that's why we
23 feel this issue is very important.

24 In order to resolve this issue we require
25 the Applicant to develop a practical program such as

1 Schmidt Hammer Tests to verify the test results. This
2 Schmidt Hammer Test having been used by you people in
3 the other areas of the plant to verify the concrete
4 strength. So I think you are familiar with the
5 procedure.

6 The Applicant should determine areas where
7 safety-related concrete was placed during the period
8 from January 1976 to February 1977. This was the
9 period that the ledger was employed. So then provide
10 a program which would ensure acceptable concrete
11 strength.

12 Do you have any questions?

13 MR. GEORGE: Yes, sir, we understand that
14 matter. Those dates are very helpful to us. Because
15 at that point in time we only had the base of that
16 poured and one left for external concrete.

17 MR. SHAO: The next issue is the maintenance
18 of air gap in concrete structures. The TRT
19 investigated the requirement to maintain an air gap
20 between concrete structures. It is on our review of
21 available inspection reports and related documents on
22 our field observations and on discussions with the
23 Applicant engineers the Technical Review Team could
24 not determine whether an adequate air space had been
25 maintained between concrete structures.

1 The debris that may be present as an air gap
2 could be wood wedges, rocks, clumps of concrete and
3 rotofoam. The presence of the pouring materials may
4 change the seismic requirements -- seismic responses
5 of Category I structures and components component as
6 calculated by Applicant. This is a violation of
7 Safety Analysis Report, sections 34111, 38451 and
8 37V28.

9 The Applicant should provide documents or
10 inspection results to demonstrate that adequate
11 separation between all concrete structures had been
12 provided. The Applicant should provide analysis to
13 demonstrate that as-built conditions do not
14 significantly increase the seismic responses of
15 Category I structures and components.

16 Any questions?

17 MR. GEORGE: No, no question.

18 MR. SHAO: The next item is seismic design
19 of control room ceiling elements.

20 Mr. Calvo has discussed it a little bit
21 before. In the control ceiling there are two or three
22 types of elements, there are Seismic Category I,
23 Seismic II and then Non-Seismic items in the control
24 ceiling. The category designations are heating,
25 ventilation, air conditioning and safety-related

1 conduits.

2 The Category II components are lighting
3 fixtures and some safety-related conduits; nonsafety-
4 related conduits.

5 The Non-Seismic items are suspended drywall
6 ceiling; acoustical ceiling and lowered ceilings.

7 We have no problem with your design of
8 Category I structures and components but according to
9 Reg. Guide 129 and your safety analysis report the
10 Seismic Category II and non-seismic items should be
11 designed in such a way that it clearly would not
12 adversely effect the safety function of safety-related
13 components or cause injury to operators.

14 The Technical Review Team found that central
15 room items there is no evidence that the possibility
16 of failure of non-seismic items has been considered.

17 The seismic analysis of Category II
18 components such as lighting fixtures and the analysis
19 on non-seismic items, suspended dry wall ceiling, which
20 was done a few weeks ago were based on prudent study
21 -- analysis. The calculations did not consider the
22 interaction effect on non-seismic items.

23 Also, the -- factors may not be
24 realistically comparable.

25 We feel that this is a very important item

1 and the Applicant should provide or modify the seismic
2 calculation on Seismic Category II and on seismic
3 items in the control room ceiling to demonstrate that
4 their failure would not adversely affect safety-
5 related components or cause injury to operators.

6 Further, the Applicant should provide the
7 results of a study which demonstrates that the
8 foregoing problems are not applicable to other
9 Category II and non-seismic structure system
10 components elsewhere in that plant.

11 MR. EISENHUT: Let me comment on that area a
12 little bit. We consider this a potentially
13 significant issue because if, in fact, there was a
14 problem, for example, with the control room ceiling
15 that could come down and cause injury to operators.
16 We've seen that elsewhere under a real earthquake.
17 We've seen it shown that it could occur in other
18 plants. So it's potentially a serious question with
19 Category II structures.

20 As I understand the design there is a
21 sloping basically drywall ceiling which has the
22 potential for being a large amount of weight that
23 could come down. So we first have a question with the
24 control room ceiling and then, secondly, we have other
25 half of the question is the generic aspects.

1 That is how were Category II structures
2 treated in the plant. Hence, that's the reason of the
3 second part of the item here. It clearly is a
4 significant issue in our mind, potentially significant
5 issue. You may show us how it's handled but we
6 consider this to be a pretty significant item.

7 MR. GEORGE: Did you have conversation with
8 the damage study people in this regard?

9 MR. SHAO: We realize how you performed
10 this. Let me show you, again, on this what I mean.
11 We have no problem with your criteria. We have
12 problems with your notations. I understand that's how
13 you do your business here. Yes, under Category I and
14 then seismic items. And putting in seismic items you
15 put damage to reaction study.

16 You look at applicable geometry and then do
17 some single data assets. See, where the component
18 would fail, it would fail whenever it would hit a
19 person or when it would hit the safety-related --

20 Now you've reclassified it. You have a two
21 in the seismic items. The way you do -- I have no
22 problem with your procedure. But mainly I have a
23 problem with your implementation of it.

24 MR. EISENHUT: In fact, we think it's a
25 pretty commendable approach. In fact, we would like

1 to see this approach --

2 MR. SHAO: The approach is a very good
3 approach.

4 MR. EISENHUT: It's a question then of when
5 we went down the path on the right on our nonseismic
6 Category I, went down to Category II and looked in the
7 control room ceiling and how it was handled, we
8 couldn't find the seismic evaluation that would show
9 that it would not cause other -- damage to other
10 components because of the large weight or injure
11 operators. So as Larry said it's a question with how
12 this approach was implemented or carried through to
13 it's --

14 MR. GEORGE: Well, the entire plant was
15 executed in that manor. This was probably a unique
16 situation. I think we understand what we need to do.

17 MR. EISENHUT: Well, you just have to
18 demonstrate to us that it's unique. Because
19 appreciate that as far as we're concerned, of the one
20 real area we followed up on if we find a problem, we
21 could argue it's 100 percent that way based on the
22 review. So you just have to demonstrate to us what
23 the effective situation really is.

24 MR. SHAO: The last item is Unauthorized
25 Cutting of Rebar in the Fuel Handling Building. The

1 alleged claim -- he drilled about ten holes about nine
2 inches deep when he installed metal plates on the Fuel
3 Handling Building for an elevation eight, ten feet and
4 six inches.

5 If the hole were nine inches deep, the No.
6 18 bar at the top layer and the No. 18 bar at the
7 bottom layer would have been cut. The Technical
8 Review Team found approval to cut the No. 18 bar at
9 the top layer. But we could not find approval to cut
10 the No. 18 bar at the bottom layer.

11 Unless the Applicant can demonstrate to us
12 that the No. 18 bar at the bottom layer was not cut,
13 they should provide calculations to demonstrate that
14 structural integrity of the floor is maintained when
15 the both bars are cut.

16 MR. EISENHUT: So the solution -- the action
17 is pretty straightforward. You can either show, as I
18 said, you cut only one or you show that with, by
19 analysis show that if it had cut both, it was
20 acceptable. There's several paths open to you here
21 for a solution to this thing.

22 MR. GEORGE: You're saying that the depth of
23 the cut would go more than one --

24 MR. SHAO: Yes, because it's nine inches
25 deep. The depth is -- it alleges that we can refute

1 that allegation and it isn't nine inches deep or cut
2 -- rebar both layers.

3 MR. EISENHUT: Is it the first and third?

4 MR. SHAO: First and third is in an
5 east/west direction. The second one in a north/west
6 direction, a north/south direction.

7 MR. EISENHUT: So if he drills over the
8 rebar and goes nine inches, he's going to go through
9 the first and third which is the top and the bottom.

10 MR. SHAO: It should go at least three
11 layers but that the other layers are not affected.

12 MR. EISENHUT: Just offset going east/west
13 and then --

14 MR. SHAO: Yes.

15 MR. EISENHUT: So then the question is --
16 but the way it looks is the evaluation that was done
17 only assumes the top bar was cut. So it's either re-
18 evaluation or demonstrate it by analysis. There's
19 several options, several paths to --

20 MR. FIKAR: I have a question for somebody.
21 Do you know exactly where these are, these 22 plates
22 and the way the holes were drilled?

23 MR. SHAO: We know exactly where they are.
24 It's a trolley process aisle. I mean, when you said
25 -- we know it's in this trolley process aisle.

1 MR. FIKAR: So we would be able to go and
2 see it?

3 MR. SHAO: You'd be able to go. I can show
4 you a drawing.

5 MR. IPPOLITO: If there are no further
6 questions of Dr. Shao --

7 MR. EISENHUT: Excuse me, Tom.

8 In fact, the letter points out that the
9 design change authorization number that ties it to --
10 as an example of one of bars, it should be something
11 to follow up on.

12 MR. IPPOLITO: If there are no further
13 questions of Dr. Shao, I'd recommend a ten minute
14 recess to rest the recorder.

15 (Whereupon, a short recess was taken.)

16 MR. IPPOLITO: Getting back to our
17 presentation, we're ready to present to you our -- the
18 third area. And that concerns this program area, and
19 Rick Kemig will make the presentation.

20 MR. KEMIG: The allegations and technical
21 concerns which we reviewed in this area involve the
22 prerequisite and preoperational testing programs we
23 want. There were 19 specific allegations which the
24 TRT categorized into seven groups. The number of
25 allegations in each group is shown on the slide along

1 with the TRT's characterization of the category topic
2 area.

3 In four of the seven categories actions are
4 required by the applicant as a result of potential
5 issues which we identified. Not all of these actions,
6 however, were the direct results of following up on
7 allegations.

8 The first category concerned the hot
9 functional testing, which was completed in 1983. And
10 the first potential issue or question relates to the
11 joint test groups function to review and approve
12 preoperational test results, specifically in this case
13 the hot functional test results.

14 The applicant in Chapter 14 of the FSAR
15 commits to NRC Regulatory Guide 1.68 for carrying out
16 the initial test program or in this case the
17 preoperational test program. In regulatory position
18 three and in other portions of this guide criteria are
19 established for carrying out the testing program,
20 including such things as the scope of testing, the
21 testing conditions and the duration of the tests.

22 In our review of 17 of 25 completed hot
23 functional tests which were reviewed and approved by
24 the joint test group, we found that in each of three
25 tests one of the test objectives had not been met.

1 And yet the test results had been approved. Those
2 specific objectives are included in the enclosure to
3 the letter which you were handed at the beginning of
4 the meeting.

5 The TRT, therefore, requires that: one,
6 those three objectives be included in the subsequent
7 functional testing program. And two, that all the
8 preoperational tests be rereviewed to determine
9 whether all test objectives had been met.

10 The next potential issue deals with the
11 review of those preoperational tests which had been
12 planned to be conducted after fuel load. Chapter 14
13 of the FSAR and NRC Regulatory Guide 1.68 assume that
14 all preoperational testing is completed with review
15 and approval performed prior to fuel load.

16 The Applicant has submitted and NRC has
17 approved a schedule for conducting some preoperational
18 tests including some hot functional testing after fuel
19 load. However, we are not aware that the Applicant
20 has formally committed to complete the review and
21 approval process for those test results in a timely
22 manner.

23 Because of the importance of the successful
24 completion of preoperational tests, particularly when
25 they're conducted after fuel load, the TRT requires

1 the Applicant to formally commit to complete the
2 review and approval process for each test prior to the
3 time that the technical specifications would require
4 that system or portions thereof to be operable.

5 Any questions?

6 The third potential issue is closely related
7 to the last one in that the configuration of certain
8 systems may not permit the systems to be declared
9 operable during certain operating modes after fuel
10 load.

11 As an example, Section 3.79 of the Technical
12 Specifications require that all snubbers be operable
13 unless their failure or the failure of the system in
14 which they are installed would not have an adverse
15 effect on a safety-related system.

16 However, until the post-coral load hot
17 functional testing is completed many snubbers cannot
18 be declared operable. Therefore, the systems in which
19 they're installed cannot be declared operable even
20 though a successful preoperational test on that
21 system may have been accomplished. But in order to
22 complete the post-coral load hot functional testing
23 the plant will have to enter operating modes which
24 require that certain systems be operable.

25 Because of the complexity of the situation

1 and the importance of systems' operability,
2 particularly after fuel loading, the TRT requires that
3 the Applicant thoroughly evaluate the situation and
4 submit that evaluation to NRC for NRC review.

5 Questions?

6 The next potential issue relates to the
7 traceability for calibration verification purposes of
8 measuring devices to the location at which they were
9 used. Startup Administrative Procedure 7 establishes
10 this requirement in order to conform with 10CFR 50,
11 Appendix B.

12 The TRT found during its review of approved
13 test result packages that the measuring devices used
14 during the 1983 hot functional tests could not be
15 traced to the specific location at which they were
16 used.

17 Apparently provisions were made for this
18 traceability in the original test procedure which
19 required that the identification of the testing device
20 be recorded on the data sheet used with that testing
21 device. However, sometime later the procedure was
22 revised and the revision required only that the
23 identification of the devices be recorded somewhere in
24 the procedure. That is no longer on the actual data
25 sheet.

1 The startup administrative procedure permits
2 either method of recording the identification of the
3 measuring device. However, when the latter method was
4 selected in the revised procedure, it was apparently
5 not recognized that the traceability of the device to
6 the location at which it was used was no longer
7 possible, which is a key matter with regard to this
8 issue.

9 Our review did find, however, that a test
10 engineer had maintained an informal log, that is one
11 that was not included in the completed and approved
12 test package, that did maintain the required
13 traceability of the measuring devices.

14 The TRT requires, therefore, that the
15 Applicant, one, include that information in improved
16 test packages or the hot functional tests conducted
17 during 1983. And two, that the Applicant insure the
18 traceability of measuring devices is appropriately
19 provided for in all future tests.

20 The next category which we identified -- no
21 questions -- is the Containment Integrated Leak Rate
22 Test. The potential issue here deals with the conduct
23 of the test and the calculation of the leakage rate.
24 The TRT found that the calculations for the leakage
25 rate were performed in accordance with ANC -- ANS

1 Standard 56.8, 1981 rather than ANC Standard N45.4,
2 1972 as committed to in the FSAR and as required by
3 10CFR 50, Appendix J.

4 Additionally, we found that pre-electrical
5 penetration, which had exhibited excessive leakage
6 during the first two attempts at conducting the test,
7 could not be successfully repaired prior to the third
8 attempt and were isolated in order to conduct the
9 third attempt, which happened to be successful.

10 This practice is generally not condoned by
11 NRC for preoperational Containment Integrated Leak
12 Rate tests because the purpose of the test, a
13 preoperational test is a test that structures systems
14 and components as near as possible to the
15 configurations they will be in during normal
16 operations.

17 These two matters were forwarded to the
18 Office of Nuclear Reactor Regulations for evaluation.
19 And I believe that you will soon receive, if you
20 haven't already, correspondence from NRR directing you
21 to justify those deviations and to identify and
22 justify any other deviations from the requirements
23 from 10CFR 50, Appendix J.

24 MR. IPPOLITO: Let me add something. I hope
25 you recognize the potential that if this is not

1 satisfactorily resolved -- this sounds like and feels
2 like an exemption to the regulations as required.

3 MR. COLLINS: Yeah, you have two distinct --
4 one is the deviation from FSAR commitments, and the
5 other one is not in accordance with the regulation
6 Appendix J. So it -- indeed, this contract schedule
7 requires exemptions to it.

8 MR. KEMIG: The next category is
9 prerequisite testing. The potential issue of question
10 that arose in this category had to do with conducting
11 the testing program in accordance with written and
12 approved procedures in order to comply with 10CFR 50,
13 Appendix B, Regulatory Guide 1.68 and your FSAR
14 Chapter 14.

15 Startup Administrative Procedure No. 1
16 establishes requirements for conducting a testing
17 program and provides two methods for changing an
18 approved procedure, either by issuing an interim
19 change to the procedure or by issuing a completion
20 revision to the procedure. Both of these methods
21 provide a formal control mechanism for changing a
22 procedure.

23 But TRT found that another approved
24 administrative procedure in this case, it was Startup
25 Administrative Procedure No. 21, dealing with who was

1 responsible for verifying initial conditions for
2 prerequisite testing had been countermanded by a
3 memorandum which was issued by startup management.
4 This method of changing a procedure violated
5 Administrative Procedure 1 because it circumvented the
6 controls established for making changes to approved
7 procedures.

8 Therefore, the TRT requires that the Startup
9 Memorandum, STM-83084 be rescinded and secondly that
10 all other Startup Memorandum be reviewed to insure
11 that there are no conflicts with any other approved
12 procedures.

13 The next category is Preoperational
14 Testing. Criterion 6 of 10CFR 50, Appendix B requires
15 that documents such as instructions, procedures, and
16 drawings, including changes thereto, be distributed
17 and used at the location where the prescribed activity
18 is being performed.

19 The TRT found that system test engineers are
20 not routinely on distribution with design change
21 information that could effect the systems to which
22 they're assigned.

23 Startup Administrative Procedure 21 makes
24 the system test engineer responsible for obtaining
25 this information and verifying its accuracy on his own

1 initiative. TRT does not believe this meets the
2 intent of Criterion 6. Most preoperational test
3 procedures are prepared well in advance of the time
4 that they will be conducted. And most STE's, System
5 Test Engineers, are responsible for several systems.

6 Therefore, prior to the conduct of any
7 system test the practice that's implemented by Startup
8 Administrative Procedure No. 21 relies upon the
9 responsible System Test Engineer to go to the document
10 control center and review any and all changes which
11 have been issued against that system before he can
12 proceed with the test.

13 In some cases this could be a task of very
14 great magnitude at a time when the responsible System
15 Test Engineer is under a great pressure to get the
16 test started.

17 Although the TRT didn't identify any
18 discrepancies in this regard during its review, we
19 believe that this is a potential problem area.
20 Therefore, we require that the Applicant review the
21 situation in an effort to provide the STE's with the
22 information they require to do their job in a more
23 timely and practical manner.

24 Questions?

25 MR. CLEMENTS: No, no questions.

1 MR. KEMIG: That completes the issues
2 identified in the test program area.

3 MR. IPPOLITO: Mr. Spence, I have some
4 concluding remarks to make.

5 One, I want -- I think it's necessary for us
6 to focus on these dotted lines which are very, very
7 important to the project and to the TRT review. This
8 dotted line signifies that areas related to the
9 electrical area that have significance to the
10 programmatic evaluation of you: QA/QC Program are
11 being fed in.

12 And I'm advising you of this because as we
13 start putting the pieces of the puzzle together here
14 it -- those pieces of the puzzle will include the
15 output from the other teams.

16 Therefore, your response, obviously, will
17 determine what information will be considered on a
18 programmatic basis by the QA -- in the QA/QC area.

19 Another item -- I'm sure you will, but let
20 me say it anyway. The last paragraph on the first
21 page of the letter should be examined with a great
22 deal of care. And let me point out about a -- I mean
23 a sentence in the middle of that paragraph that says
24 that "Programs should address the root cause of each
25 problem identified and its generic implications." I

1 want to highlight that to you.

2 And last, but surely not the least I want to
3 compliment the professionalism of your staff in their
4 interaction with the technical review team. I realize
5 it's extremely difficult -- I know I, as an engineer,
6 would not feel very comfortable with other engineers
7 looking over my shoulder trying to second guess what I
8 did or try to, you know -- but I would readily admit
9 to you that the cooperation has been nothing but
10 ideal. And I want to thank you for that. Let's hope
11 it continues one more second.

12 Thank you.

13 MR. SPENCE: Tom, if I can make some --

14 MR. IPPOLITO: Surely, please do.

15 MR. SPENCE: -- closing remarks from the
16 point of view of the Applicant.

17 Thank you very much for that compliment. I
18 am pleased to know that the lines of communication
19 have worked as we intended for them to work between my
20 staff and your TRT in your stay at Comanche Peak.

21 From the point of view of Texas Utilities
22 Generating Company I want you to know that we
23 appreciate the amount of management attention and
24 staff resources that NRC has committed to this effort.
25 And we realize it's a significant undertaking for you

1 as well as for us, but it's important.

2 I want to express our appreciation to you
3 and your team and to Mr. Eisenhut and Mr. Denton, in
4 their absence, for your decision to share with us
5 these open potential issues and questions as they
6 surface during your work rather than the alternative
7 of waiting to the end.

8 Time is of the essence to all of us, and
9 this gives us a chance to understand what questions
10 you're running into. And gives us a chance to work on
11 them on a timely basis in parallel with the completion
12 of your work.

13 We understand from what's been said today
14 and before that there is ongoing work, and there
15 likely will be other issues to surface as you complete
16 your other functional activities. And we're anxious
17 to get all those issues on the table so we can address
18 them.

19 I want to assure you and your colleagues
20 that we acknowledge the importance of the satisfactory
21 resolution of all of these questions and issues, not
22 only to your satisfaction as our regulator but also --
23 from our point it's important to us to make sure that
24 all safety issues have been addressed and closed out.
25 Because ultimately nobody has any greater interest in

1 the safety of that plant than us as the owner and the
2 operator. So we appreciate the information.

3 Obviously it's going to take longer than
4 we've allocated here, this afternoon, to digest it
5 all. We intend to get on it right away and to
6 promptly develop an action plan to address all these
7 issues. And I presume from what's been said here
8 today that my staff will continue to have access to
9 you and your staff if we have additional questions
10 about the information you've shared with us.

11 MR. IPPOLITO: I was about to offer it to
12 you. If -- in your investigation an attempt to
13 resolve these issues -- if something is not clear to
14 you, just let me know.

15 MR. SPENCE: It's also my understanding from
16 what's been said here today that probably a preferred
17 course of action from your point of view as well as
18 ours, perhaps, would be as we develop our plan of
19 action for addressing and answering these questions
20 and addressing these issues that we should plan to --

21 MR. IPPOLITO: Don't wait.

22 MR. SPENCE: -- sit with you all and share
23 with you our plan and not wait until the end and try
24 to --

25 MR. IPPOLITO: Don't wait. Thank you.

1 John, would you care to make some comments?

2 MR. COLLINS: Yeah, I want to mention that
3 at no time in the discussions did we discuss and
4 potential course of an action that may fall out of the
5 findings. We will be reviewing in total all of the
6 findings from all of the teams and deciding if there
7 is potential enforcement action and issuing that as a
8 separate enforcement package.

9 So the fact that we did not mention it does
10 not mean that there is no potential there for
11 enforcement.

12 MR. SPENCE: Can I assume that perhaps our
13 response and resolution of some of these issues could
14 bear some weight in that determination of enforcement
15 actions?

16 MR. COLLINS: It would certainly bear on the
17 severity of it. But if it's an enforcement action
18 that should have been identified by you people and
19 even though they have taken, now, the corrective
20 action, that's still an enforcement action that may
21 bear on the severity to it.

22 MR. IPPOLITO: I think what Mike meant,
23 John, is that in their response they show us that
24 maybe we didn't look at the right documents.

25 MR. SPENCE: Oh, absolutely.

1 MR. IPPOLITO: If that were the case then
2 it's still issue and --

3 MR. COLLINS: It's incumbent on us to look
4 at all the documentation --

5 MR. IPPOLITO: The whole record, right.

6 MR. COLLINS: -- on the whole record.

7 MR. IPPOLITO: Okay.

8 The staff --

9 MR. COLLINS: I'm sure that your legal
10 department would be after us.

11 MR. IPPOLITO: Staff, are there any other
12 questions from the staff? Any from the visiting --
13 visitors? Any questions?

14 Well, if there are none, then the meeting is
15 adjourned.

16 Thank you very much.

17 (Whereupon, the meeting was adjourned at
18 3:57 p.m.)

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CERTIFICATE OF PROCEEDINGS:

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This is to certify that the attached proceedings,

IN THE MATTER OF:

TECHNICAL REVIEW TEAM BRIEFING: COMANCHE PEAK REVIEW

DATE: 9.18.84

PLACE: BETHESDA, MD

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

REPORTER: S. ALEXIS CAIN

SIGNED: *S. Alexis Cain*

TRANSCRIBER: NEAL R. GROSS

SIGNED: *Neal R. Gross*

TECHNICAL REVIEW TEAM BRIEFING

SEPTEMBER 18, 1984

INTRODUCTION

ROLE OF THE TRT

TRT REVIEW AREAS

- ELECTRICAL/INSTRUMENTATION
- CIVIL/MECHANICAL
- QA/QC
- COATINGS
- TEST PROGRAMS

STATUS OF ONSITE REVIEW EFFORT

POTENTIAL ISSUES IN AREAS OF

- ELECTRICAL/INSTRUMENTATION
- CIVIL
- TEST PROGRAMS
- (QA/QC, MECHANICAL AND COATINGS AREAS LATER)

CONCLUSION

TECHNICAL REVIEW TEAM (TRT)

Project Director
T. A. Ippolito, AEOD
Assistant
J. Gagliardo, IE

Staff
A. Vietti
R.C. Tang
R. Wessman

Electrical/
Instrumentation
Leader
J. Calvo, NRR

Civil/Mechanical
Leader
L. Shao, RES

QA/QC Leader
H. Livermore, R-III

Coatings Leader
P. Matthews, NRR

Test Programs
Leader
R. Kemig, R-I

- Technical Issues
- Allegations
- QA/QC Related to E, I&C

- Technical Issues
- Allegations
- QA/QC Related to Civil/Mech.

- Programmatic and Generic technical issues and allegations
- Integrate QA/QC from other groups
- Interface with other groups on QA/QC

- Technical Issues
- Allegations
- QA/QC Related to Coatings

- Technical Issues
- Allegations
- QA/QC Related to Test Programs

TYPICAL TRT INVESTIGATIVE ACTIONS

- 0 APPLICANT RECORDS REVIEW
- 0 INTERVIEWS WITH ALLEGERS
- 0 REVIEW OF AFFIDAVITS AND DOCUMENTS PROVIDED BY ALLEGERS
- 0 INTERVIEWS WITH APPLICANT AND B&R STAFF
- 0 REVIEW OF DEPOSITIONS
- 0 REVIEW OF OFFICE OF INVESTIGATIONS REPORTS
- 0 REVIEW OF REGIONAL INSPECTION RECORDS
- 0 INSPECTION OF PLANT SYSTEMS AND COMPONENTS
- 0 AS-BUILT VERIFICATION PROGRAM
- 0 ASSESSMENT OF SAFETY SIGNIFICANCE

ALLEGATIONS BREAKDOWN

<u>AREA</u>	<u>GROUP LEADER</u>	<u>NO. OF CATEGORIES</u>	<u>NO. OF ALLEGATIONS</u>
ELECTRICAL	J. CALVO	9	53
CIVIL/STRUCTURAL	L. SHAO	17	56
TEST PROGRAMS	R. KEIMIG	7	19

ELECTRICAL/INSTRUMENTATION ALLEGATIONS SUMMARY

<u>CATEGORY NO.</u>	<u>CHARACTERIZATION</u>	<u>NUMBER OF ALLEGATIONS</u>	<u>APPLICANT ACTION REQUIRED</u>
1	ELECTRICAL CABLE TERMINATIONS	12	YES
2	ELECTRICAL CABLE TRAY & CONDUIT INSTALLATION	9	NO
3	ELECTRICAL EQUIPMENT SEPARATION	9	YES
4	ELECTRICAL CONDUIT SUPPORTS	1	YES
5	ELECTRICAL NCR ACTIVITIES	23	NO
6	ELECTRICAL QC INSPECTOR TRAINING/QUALIFICATIONS	4	YES
7	ELECTRICAL CABLE INSTALLATION	6	NO
8	ELECTRICAL PROCEDURES	10	NO
9	ELECTRICAL INSPECTION REPORTS, INSPECTION REMOVAL NOTICES & IN-PROCESS INSPECTIONS	2	NO
	TOTAL	77*	

* ACTUAL NUMBER OF ALLEGATIONS IS 53; SOME ALLEGATIONS INVOLVED MORE THAN ONE CATEGORY.

ELECTRICAL/INSTRUMENTATION

CATEGORY NO. 1 - ELECTRICAL CABLE TERMINATIONS

POTENTIAL OPEN ISSUES:

- o LACK OF AWARENESS OF QC ELECTRICAL INSPECTORS TO INDICATE IN THE INSPECTION REPORTS WHEN THE INSTALLATION OF THE "NUCLEAR HEAT-SHRINKAGE CABLE INSULATION SLEEVES" WAS REQUIRED TO BE WITNESSED.
- o SELECTED INSPECTION REPORTS DID NOT INDICATE THAT THE REQUIRED WITNESSING OF SPLICE INSTALLATION WAS DONE.
- o ABSENCE OF SPLICE QUALIFICATION REQUIREMENTS AND PROVISIONS IN THE INSTALLATION PROCEDURES TO VERIFY OPERABILITY OF THOSE CIRCUITS FOR WHICH SPLICES WERE BEING USED.
- o SELECTED CABLE TERMINATIONS WERE IN DISAGREEMENT WITH DRAWINGS.
- o NONCONFORMANCE REPORTS CONCERNING VENDOR-INSTALLED TERMINAL LUGS IN GE MOTOR CONTROL CENTERS HAD BEEN IMPROPERLY CLOSED.

ACTIONS REQUIRED BY TUEC:

- o CLARIFY PROCEDURAL REQUIREMENTS AND INSPECTOR TRAINING WITH RESPECT TO THE AREAS IN WHICH NUCLEAR HEAT-SHRINKABLE SLEEVES ARE REQUIRED ON BUTT SPLICES; ASSURE THAT SUCH SLEEVES ARE INSTALLED WHERE REQUIRED.
- o ASSURE THAT THE QC INSPECTION REQUIRING WITNESSING FOR BUTT SPLICES HAVE BEEN PERFORMED AND PROPERLY DOCUMENTED; AND VERIFY THAT ALL BUTT SPLICES ARE PROPERLY IDENTIFIED ON THE APPROPRIATE DRAWINGS AND IN PANELS.
- o DEVELOP ADEQUATE INSTALLATION/INSPECTION PROCEDURES TO ASSURE THE OPERABILITY OF THOSE CIRCUITS CONTAINING BUTT SPLICES, THAT THE WIRING SPLICING MATERIALS ARE QUALIFIED FOR THE SERVICE CONDITIONS, AND THAT SPLICES ARE NOT LOCATED ADJACENT TO EACH OTHER.

CONTINUED

- 2 -

- o REINSPECT ALL SAFETY-RELATED AND ASSOCIATED TERMINATIONS IN THE CONTROL ROOM PANELS AND IN THE TERMINATION CABINETS IN THE CABLE SPREADING ROOM TO VERIFY THAT THEY ARE IN ACCORDANCE WITH DRAWINGS. SHOULD THE RESULTS OF THIS REINSPECTION REVEAL AN UNACCEPTABLE LEVEL OF NONCONFORMANCE TO DRAWINGS, THE SCOPE OF THIS REINSPECTION EFFORT SHALL BE EXPANDED TO INCLUDE ALL SAFETY-RELATED AND ASSOCIATED TERMINATIONS AT CPSES.
- o REEVALUATE AND REDISPOSITION ALL NCRs RELATED TO VENDOR-INSTALLED TERMINAL LUGS IN GE MOTOR CONTROL CENTERS.

ELECTRICAL/INSTRUMENTATION

CATEGORY NO. 3 - ELECTRICAL EQUIPMENT SEPARATION

POTENTIAL OPEN ISSUES

- o NUMEROUS CASES OF SEPARATE SAFETY-RELATED CABLES WITHIN FLEXIBLE CONDUITS INSIDE MAIN CONTROL PANELS DID NOT MEET MINIMUM SEPARATION REQUIREMENTS.

- o SEVERAL CASES OF SEPARATE SAFETY AND NONSAFETY-RELATED CABLES AND SAFETY AND NONSAFETY-RELATED CABLES WITHIN FLEXIBLE CONDUITS INSIDE MAIN CONTROL ROOM PANELS DID NOT MEET MINIMUM SEPARATION REQUIREMENTS.

- o EXISTING TUEC'S ANALYSIS SUBSTANTIATING THE ADEQUACY OF THE CRITERIA FOR SEPARATION BETWEEN CONDUITS AND CABLE TRAYS HAD NOT BEEN REVIEWED BY THE NRC STAFF.

- o TWO MINOR VIOLATIONS OF THE SEPARATION INSIDE PANELS CP1-EC-PRCB-09 AND CP1-EC-PRCB-03 CONCERNING A BARRIER FOUND REMOVED AND REDUNDANT FIELD WIRING NOT MEETING MINIMUM SEPARATION.

ACTIONS REQUIRED BY TUEC

- o REINSPECT ALL PANELS AT CPSES THAT CONTAIN REDUNDANT SAFETY-RELATED CABLES WITHIN CONDUITS, OR SAFETY AND NON-SAFETY RELATED CABLES WITHIN CONDUITS, AND EITHER CORRECT EACH VIOLATION OF THE SEPARATION CRITERIA, OR DEMONSTRATE BY ANALYSIS THE ACCEPTABILITY OF THE CONDUITS AS BARRIERS FOR EACH CASE WHERE THE MINIMUM SEPARATION IS NOT MET.

- o REINSPECT ALL PANELS AT CPSES, AND EITHER CORRECT EACH VIOLATION OF THE SEPARATION CRITERIA CONCERNING SEPARATE CABLES AND CABLES WITHIN FLEXIBLE CONDUIT, OR DEMONSTRATE BY ANALYSIS THE ADEQUACY OF THE CONDUITS AS BARRIERS.

- o SUBMIT THE ANALYSES THAT SUBSTANTIATE THE ACCEPTABILITY OF THE CRITERIA STATED IN THE ELECTRICAL ERECTION SPECIFICATIONS GOVERNING THE SEPARATION BETWEEN INDEPENDENT CONDUITS AND CABLE TRAYS.

- o CORRECT TWO MINOR VIOLATIONS OF THE SEPARATION CRITERIA INSIDE PANELS CP1-EC-PRCB-09 AND CP1-EC-PRCP-03.

ELECTRICAL/INSTRUMENTATION

CATEGORY NO. 4 - ELECTRICAL CONDUIT SUPPORTS

POTENTIAL OPEN ISSUE

- o THE SUPPORT INSTALLATION IN SEISMIC CATEGORY I AREAS, OTHER THAN THE CONTROL ROOM, FOR NONSAFETY-RELATED CONDUIT LESS THAN OR EQUAL TO TWO INCHES IN DIAMETER WAS INCONSISTENT WITH SEISMIC REQUIREMENTS. NO EVIDENCE COULD BE FOUND THAT SUBSTANTIATED THE ADEQUACY OF THE INSTALLATION FOR NONSAFETY-RELATED CONDUIT OF ANY SIZE.

ACTIONS REQUIRED BY TUEC

- o SUBSTANTIATE THE ADEQUACY OF THE SEISMIC SUPPORT SYSTEM INSTALLATION FOR NONSAFETY-RELATED CONDUIT IN SEISMIC CATEGORY I AREAS OF THE PLANT OTHER THAN THE CONTROL ROOM.

ELECTRICAL/INSTRUMENTATION

CATEGORY NO. 6 - ELECTRICAL QC INSPECTOR TRAINING/QUALIFICATIONS

POTENTIAL OPEN ISSUES

- o LACK OF SUPPORTING DOCUMENTATION ON PERSONNEL QUALIFICATIONS IN THE TRAINING AND CERTIFICATION FILES.
- o LACK OF GUIDELINES AND PROCEDURAL REQUIREMENTS FOR THE ELECTRICAL QC INSPECTOR TESTING PROGRAM.
- o LACK OF DOCUMENTATION FOR ASSURING THAT THE REQUIREMENTS FOR ELECTRICAL QC INSPECTOR RECERTIFICATION WERE BEING MET.

ACTIONS REQUIRED BY TUEC

- o REVIEW ALL THE ELECTRICAL QC INSPECTOR TRAINING, QUALIFICATION, CERTIFICATION AND RECERTIFICATION FILES AGAINST THE PROJECT REQUIREMENTS AND PROVIDE THE INFORMATION IN SUCH A FORM THAT EACH REQUIREMENT IS CLEARLY SHOWN TO HAVE BEEN MET BY EACH INSPECTOR. IF AN INSPECTOR IS FOUND TO NOT MEET THE TRAINING, QUALIFICATION, CERTIFICATION, OR RECERTIFICATION REQUIREMENTS, TUEC SHALL THEN REVIEW THE RECORDS TO DETERMINE THE ACCEPTABILITY OF INSPECTIONS MADE BY THE UNQUALIFIED INDIVIDUALS AND PROVIDE A STATEMENT ON THE IMPACT OF THE DEFICIENCIES NOTED ON THE SAFETY OF THE PROJECT.
- o DEVELOP A TESTING PROGRAM FOR ELECTRICAL QC INSPECTORS WHICH OPTIMIZES ADMINISTRATIVE GUIDELINES, PROCEDURE REQUIREMENTS AND TEST FLEXIBILITY TO ASSURE THAT SUITABLE PROFICIENCY IS ACHIEVED AND MAINTAINED.
- o THESE ACTIONS SHOULD BE COORDINATED AS APPROPRIATE WITH OTHER ACTIONS ON THE SAME SUBJECT THAT WILL BE ADDRESSED UNDER THE QA/QC CATEGORY ON "TRAINING AND QUALIFICATION."

CIVIL/STRUCTURAL ALLEGATIONS SUMMARY

<u>CATEGORY NO.</u>	<u>CHARACTERIZATION</u>	<u>NO. OF ALLEGATIONS</u>	<u>APPLICANT ACTIONS REQUIRED</u>
1	INADEQUATE MATERIALS USED IN CONCRETE	6	NO
2	CONCRETE PLACEMENTS	3	NO
3	POOR WEATHER CONDITIONS	2	NO
4	CONCRETE VOIDS/CRACKED	7	NO
5	MISCELLANEOUS CONCRETE	4	NO
6	REBAR IMPROPERLY INSTALLED/ OMITTED	9	YES
7	CONCRETE - UNDOCUMENTED	1	NO
8	FALSE/WRONG DOCUMENTS	6	YES
9	QC INSPECTOR TRAINING	1	NO
10	IMPROPER TESTING	6	NO
11	SEISMIC DESIGN/CONSTRUCTION	1	YES
12	CONCRETE CONSTRUCTION AND DEFICIENCIES/TOLERANCES	1	NO
13	CRACKS IN CONCRETE BENEATH THE REACTOR VESSEL	1	NO
14	SEISMIC DESIGN OF CONTROL ROOM CEILING ELEMENTS	1	YES
15	REBAR IMPROPERLY DRILLED	5	YES
16	EXCAVATION/BACKFILL	1	NO
17	CONCRETE SAMPLING	1	NO
	TOTAL ALLEGATIONS	56	

CIVIL/STRUCTURAL

CATEGORY NO. 6 - UNABLE TO JUSTIFY REINFORCING STEEL OMITTED IN REACTOR CAVITY WALL

POTENTIAL OPEN ISSUE

A PORTION OF REINFORCING STEEL WAS OMITTED IN A REACTOR CAVITY CONCRETE WALL PLACEMENT BETWEEN ELEVATION 812' - 0" AND 819' - 0½".

ACTION REQUIRED BY TUEC

TUEC SHOULD PROVIDE AN ANALYSIS THAT VERIFIES THE ADEQUACY OF THE REINFORCING STEEL IN THE AS-BUILT CONDITION OF THE REACTOR CAVITY WALL.

CIVIL/STRUCTURAL

CATEGORY NO. 8 - FALSIFICATION OF CONCRETE COMPRESSION STRENGTH TEST RESULTS

POTENTIAL OPEN ISSUE

ALLEGATION ON FALSIFICATION OF CONCRETE COMPRESSIVE STRENGTH TEST RESULTS
COULD NOT BE PROVED VALID OR INVALID. CONCRETE STRENGTH LOWER THAN THAT
SPECIFIED IN THE DESIGN MAY REDUCE THE LOAD RESISTING CAPACITY OF STRUCTURES.

ACTION REQUIRED BY TUEC

TUEC SHOULD DETERMINE AREAS WHERE RELATED CONCRETE WAS PLACED DURING THE PERIOD
FROM JANUARY 1976 TO FEBRUARY 1977 AND PROVIDE A PROGRAM TO ASSURE ACCEPTABLE
CONCRETE STRENGTH, SUCH AS CONDUCT APPROPRIATE RANDOM SCHMIDT HAMMER TESTS ON
THE CONCRETE IN AREAS WHERE SAFETY IS CRITICAL.

CIVIL/STRUCTURAL

CATEGORY NO. 11 - MAINTENANCE OF AIR GAP BETWEEN CONCRETE STRUCTURES

POTENTIAL OPEN ISSUES

BASED ON THE REVIEW OF AVAILABLE INSPECTION REPORTS AND RELATED DOCUMENTS, FIELD OBSERVATIONS AND DISCUSSIONS WITH TUEC ENGINEERS, THE TRT CANNOT DETERMINE WHETHER AN ADEQUATE AIR GAP HAS BEEN PROVIDED BETWEEN CONCRETE STRUCTURES.

ACTION REQUIRED BY TUEC

PROVIDE DOCUMENTS OR INSPECTION RESULTS TO DEMONSTRATE THAT ADEQUATE SEPARATION BETWEEN ALL CONCRETE STRUCTURES HAS BEEN PROVIDED. PERFORM ANALYSIS TO DEMONSTRATE THAT THE AS BUILT CONDITIONS DO NOT SIGNIFICANTLY INCREASE THE SEISMIC RESPONSES OF CATEGORY I STRUCTURES AND COMPONENTS.

CIVIL/STRUCTURAL

CATEGORY NO. 14 - SEISMIC DESIGN OF CONTROL ROOM CEILING ELEMENTS

POTENTIAL OPEN ISSUE

FIELD RUN CONDUIT, THE SUSPENDED CEILING ELEMENTS, AND THE LIGHTING FIXTURES INSTALLED IN THE CONTROL ROOM CEILING ARE CLASSIFIED AS NON-SEISMIC OR SEISMIC CATEGORY II AND MAY FALL AS A RESULT OF A SEISMIC EVENT.

ACTION REQUIRED BY TUEC

PROVIDE OR MODIFY SEISMIC CALCULATIONS ON SEISMIC CATEGORY II AND NON-SEISMIC ELEMENTS IN THE CONTROL ROOM CEILING TO DEMONSTRATE THAT THEIR FAILURES WILL NOT AFFECT SAFETY RELATED COMPONENTS OR CAUSE INJURY TO OPERATORS.

PROVIDE THE RESULTS OF AN ANALYSIS WHICH DEMONSTRATE THAT THE FOREGOING PROBLEMS ARE NOT APPLICABLE TO OTHER CATEGORY II AND NONSEISMIC STRUCTURES, SYSTEMS, AND COMPONENTS ELSEWHERE IN THE PLANT.

CIVIL STRUCTURAL

CATEGORY NO. 15 - UNAUTHORIZED CUTTING OF REBAR IN THE FUEL HANDLING BUILDING

POTENTIAL OPEN ISSUE

UNAUTHORIZED CUTTING OF REBAR ASSOCIATED WITH THE INSTALLATION OF THE TROLLEY PROCESS AISLE RAILS IN THE FUEL HANDLING BUILDING MAY HAVE OCCURRED. LOSS OF THE REBAR MAY REDUCE THE LOAD RESISTING CAPACITY OF THE CONCRETE FLOOR SLAB.

ACTION REQUIRED BY TUEC

PROVIDE THE FOLLOWING INFORMATION REGARDING DRILLING OF REBAR:

- (1) INFORMATION THAT DEMONSTRATES THAT ONLY THE UPPERMOST #18 BAR WAS CUT, OR
- (2) DESIGN CALCULATIONS THAT DEMONSTRATE THAT STRUCTURAL INTEGRITY IS MAINTAINED IF #18 BARS IN THE UPPERMOST AND THE LOWERMOST LAYERS ARE CUT.

TESTING PROGRAM ALLEGATIONS SUMMARY

<u>CATEGORY NO.</u>	<u>CHARACTERIZATION</u>	<u>NO. OF ALLEGATIONS</u>	<u>APPLICANT ACTION REQUIRED</u>
1	DEFICIENT HOT FUNCTIONAL TESTS	12	YES
2	NO TESTING PROGRAM FOR UNIT 2	1	NO
3	DEFICIENT CONTAINMENT LEAKAGE TESTING	1	YES
4	FLAWED PREREQUISITE TESTING	1	YES
5	FLAWED PREOPERATIONAL TESTING	2	YES
6	NONCONSERVATISM OF TUEC MANAGEMENT APPROACH	1	NO
7	MINIMAL QA/QC SURVEILLANCE OF TESTING ACTIVITIES	1	NO
	TOTAL ALLEGATIONS	19	

TESTING PROGRAM

CATEGORY NO. 1 - HOT FUNCTIONAL TESTING

POTENTIAL OPEN ISSUES:

- o DEFICIENCIES IN REVIEW OF PREOPERATIONAL TEST RESULTS BY THE JTG
- o REVIEW RESULTS OF PREOPERATIONAL TESTS PLANNED FOR CONDUCT SUBSEQUENT TO INITIAL FUEL LOAD AND PRIOR TO DECLARING SYSTEM OPERABLE PER TECHNICAL SPECIFICATIONS
- o CONFIGURATION OF SYSTEMS MAY NOT MEET TECHNICAL SPECIFICATION REQUIREMENTS FOR OPERABILITY, FOR CERTAIN MODES, WHEN PREOPERATIONAL TESTS ARE CONDUCTED SUBSEQUENT TO INITIAL FUEL LOAD
- o TRACEABILITY OF THE THERMAL EXPANSION TEST EQUIPMENT, CALIBRATION DATA, AND LOCATIONS WHERE TEST EQUIPMENT USED

ACTION REQUIRED BY TUEC:

- o INCLUDE HFT OBJECTIVES NOT MET DURING FEBRUARY - JUNE 1983 HFT IN SUBSEQUENT HFT PROGRAM AND REVIEW ALL OF HFT TEST PACKAGES TO IDENTIFY ANY OTHER OVERSIGHTS BY JTG
- o COMMITMENT TO FORMAL REVIEW AND APPROVAL OF DEFERRED PREOPERATIONAL TEST RESULTS BY QUALIFIED GROUP PRIOR TO DECLARING SYSTEM OPERABLE PER TECHNICAL SPECIFICATIONS
- o CONDUCT EVALUATION TO IDENTIFY SYSTEMS WHICH WOULD NOT MEET TECHNICAL SPECIFICATION OPERABILITY REQUIREMENTS DURING POST-FUEL LOAD PREOPERATIONAL TESTING ACTIVITY AND SUBMIT TO NRC FOR REVIEW
- o INCLUDE CALIBRATION DATA FOR SPECIFIC MEASURING DEVICES AND LOCATIONS WHERE DEVICES WERE USED IN TEST RECORDS

TESTING PROGRAM

CATEGORY NO. 3 - CONTAINMENT INTEGRATED LEAK RATE TESTING

POTENTIAL OPEN ISSUES:

- o CALCULATION OF CILRT RESULTS NOT IN ACCORDANCE WITH FSAR COMMITMENTS AND 10 CFR 50, APPENDIX J
- o CERTAIN ELECTRICAL PENETRATIONS WERE ISOLATED DURING CILRT

ACTIONS REQUIRED BY TUEC:

- o IDENTIFY AND JUSTIFY DEVIATIONS FROM FSAR COMMITMENTS AND NRC REQUIREMENTS THAT OCCURRED DURING CONDUCT OF CILRT

TESTING PROGRAM

CATEGORY NO. 4 - PREREQUISITE TESTING

POTENTIAL OPEN ISSUES:

- o STARTUP MANAGEMENT BYPASSED APPROVED ADMINISTRATIVE PROCEDURES WITH MEMORANDUM

ACTIONS REQUIRED BY TUEC:

- o RESCIND STARTUP MEMORANDUM (STM - 83084) WHICH WAS ISSUED IN CONFLICT WITH CP-SAP-21
- o ASSURE THAT NO OTHER MEMORANDA WERE ISSUED WHICH CONFLICT WITH APPROVED ADMINISTRATIVE OR OTHER PROCEDURES

TESTING PROGRAM

CATEGORY NO. 5 - PREOPERATIONAL TESTING

POTENTIAL OPEN ISSUES:

- o CURRENT DESIGN INFORMATION NOT ROUTINELY DISTRIBUTED TO SYSTEM TEST ENGINEERS

ACTIONS REQUIRED BY TUEC:

- o ASSURE THAT STEs AND OTHER RESPONSIBLE PERSONNEL ARE PROVIDED WITH COPIES OF CURRENT, CONTROLLED DESIGN DOCUMENTS AND CHANGE NOTICES



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

SEP 18 1984

Dockets: 50-445
50-446

Texas Utilities Electric Company
Attn: M. D. Spence, President, TUGCO
Skyway Tower
400 North Olive Street
Lock Box 81
Dallas, Texas 75201

Dear Mr. Spence:

SUBJECT: COMANCHE PEAK REVIEW

On July 9, 1984, the staff began an intensive onsite effort designed to complete a portion of the reviews necessary for the staff to reach its decision regarding the licensing of Comanche Peak Unit 1. The onsite effort covered a number of areas, including allegations of improper construction practices at the facility.

The NRC assembled a Technical Review Team (TRT) responsible for evaluating most of the technical issues at Comanche Peak, including allegations. The TRT has recently identified a number of items that have potential safety implications for which we require additional information. These items are listed in the enclosure to this letter. Further background information regarding these issues will be published in a Supplement to a Safety Evaluation Report (SSER), which will document the overall TRT's assessment of the significance of the issues examined.

The items in the enclosure to this letter, which are in the general areas of electrical/instrumentation, civil/structural and test programs, cover only a portion of the TRT's effort. The TRT evaluation of items in the areas of mechanical, QA/QC, and coatings, and its consideration of the programmatic implications of these findings, are still in progress. A summary of these issues will be provided to you at a later date.

You are requested to submit additional information to the NRC, in writing, including a program and schedule for completing a detailed and thorough assessment of the issues identified. This program plan and its implementation will be evaluated by the staff before NRC considers the issuance of an operating license for Comanche Peak, Unit 1. The program plan should address the root cause of each problem identified and its generic implications on safety-related systems, programs, or areas. The collective significance of these deficiencies should also be addressed. Your program plan should also include the proposed TUGCO action to assure that such problems will be precluded from occurring in the future.


SEP 18 1984

Mr. M. D. Spence

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This request is submitted to you in keeping with the NRC practice of promptly notifying applicants of outstanding information/evaluation needs that could potentially affect the safe operation of their plant. Further requests for additional information of this nature will be made, if necessary, as the activities of the TRT progress.

Sincerely,


Darrell G. Eisenhut, Director
Division of Licensing, NRR

Enclosure:
As stated

cc w/enclosure
See next page

COMANCHE PEAK

Mr. M. D. Spence
President
Texas Utilities Generating Company
400 N. Olive St., L.B. 81
Dallas, Texas 75201

cc: Nicholas S. Reynolds, Esq.
Bishop, Liberman, Cook,
Purcell & Reynolds
1200 Seventeenth Street, N. W.
Washington, D. C. 20036

Robert A. Wooldridge, Esq.
Worsham, Forsythe, Sampels &
Wooldridge
2001 Bryan Tower, Suite 2500
Dallas, Texas 75201

Mr. Homer C. Schmidt
Manager - Nuclear Services
Texas Utilities Generating Company
Skyway Tower
400 North Olive Street
L. B. 81
Dallas, Texas 75201

Mr. H. R. Rock
Gibbs and Hill, Inc.
393 Seventh Avenue
New York, New York 10001

Mr. A. T. Parker
Westinghouse Electric Corporation
P. O. Box 355
Pittsburgh, Pennsylvania 15230

Renea Hicks, Esq.
Assistant Attorney General
Environmental Protection Division
P. O. Box 12548, Capitol Station
Austin, Texas 78711

Mrs. Juanita Ellis, President
Citizens Association for Sound
Energy
1426 South Polk
Dallas, Texas 75224

Ms. Nancy H. Williams
CYGNA
101 California Street
San Francisco, California 94111

Mr. James E. Cummins
Resident Inspector/Comanche Peak
Nuclear Power Station
c/o U. S. Nuclear Regulatory
Commission
P. O. Box 38
Glen Rose, Texas 76043

Mr. John T. Collins
U. S. NRC, Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Mr. Lanny Alan Sinkin
114 W. 7th, Suite 220
Austin, Texas 78701

B. R. Clements
Vice President Nuclear
Texas Utilities Generating Company
Skyway Tower
400 North Olive Street
L. B. 81
Dallas, Texas 75201

William A. Burchette, Esq.
1200 New Hampshire Avenue, N. W.
Suite 420
Washington, D. C. 20036

Ms. Billie Pirner Garde
Citizens Clinic Director
Government Accountability Project
1901 Que Street, N. W.
Washington, D. C. 20009

David R. Pigott, Esq.
Orrick, Herrington & Sutcliffe
600 Montgomery Street
San Francisco, California 94111

Anthony Z. Roisman, Esq.
Trial Lawyers for Public Justice
2000 P. Street, N. W.
Suite 611
Washington, D. C. 20036

REQUEST FOR ADDITIONAL INFORMATIONI. Electrical/Instrumentation Areaa. Electrical Cable Terminations

The Technical Review Team (TRT) inspected random samples of safety-related terminations, butt splices inside panels, and vendor-installed terminal lugs in General Electric (GE) motor control centers, and reviewed documentation relative to the installations.

1. The TRT found a lack of awareness on the part of quality control (QC) electrical inspectors to document in the inspection reports when the installation of the "nuclear heat-shrinkable cable insulation sleeves" was required to be witnessed.

Accordingly, TUEC shall clarify procedural requirements and provide additional inspector training with respect to the areas in which nuclear heat-shrinkable sleeves are required on splices and assure that such sleeves are installed where required.

2. The TRT found inspection reports that did not indicate that the required witnessing of splice installation was done. Examples are as follows:

IR ET-1-0005393	IR ET-1-0005396
IR ET-1-0005394	IR ET-1-0006776
IR ET-1-0005395	IR ET-1-0014790

Accordingly, TUEC will assure that all QC inspections requiring witnessing for butt splices have been performed and properly documented; and verify that all butt splices are properly identified on the appropriate drawings and are physically identified within the appropriate panels.

3. The TRT found a lack of splice qualification requirements and provisions in the installation procedures to verify the operability of those circuits for which splices were being used.

Accordingly, TUEC shall develop adequate installation/inspection procedures to assure that the wiring splicing materials are qualified for the appropriate service conditions, and that splices are not located adjacent to each other.

4. Selected cable terminations were found that did not agree with their locations on drawings. Examples are as follows:

Panel CP1-ECPRCB-14, Cable E0139880
Panel CP1-ECPRTC-16, Cable E0110040
Panel CP1-ECPRTC-16, Cable E0118262
Panel CP1-ECPRTC-27, Cable EG104796
Panel CPX-ECPRCV-01, Cable EG021856
Panel CP1-ECPRCB-02, Cable NK139853 (nonsafety)

Accordingly, TUEC shall reinspect all safety-related and associated terminations in the control room panels and in the termination cabinets in the cable spreading room to verify that their locations are accurately depicted on drawings. Should the results of this reinspection reveal an unacceptable level of nonconformance to drawings, the scope of this reinspection effort shall be expanded to include all safety-related and associated terminations at CPSES.

5. The TRT found cases where nonconformance reports (NCRs) concerning vendor-installed terminal lugs in GE motor control centers had been improperly closed. Examples are NCR Nos. E-84-01066 through NCR E-84-01076, inclusive.

Accordingly, TUEC shall reevaluate and redispotion all NCRs related to vendor-installed terminal lugs in GE motor control centers.

b. Electrical Equipment Separation

The TRT reviewed the separation criteria between separate cables, trays and conduits in the main control room and cable spreading room in Unit 1, and the compatibility of the electrical erection specifications with regulatory requirements. The TRT reviewed documentation and inspected random samples of separation between safety-related cables, trays and conduits and between them and nonsafety-related cables, trays and conduits.

1. In numerous cases, safety-related cables within flexible conduits inside main control room panels did not meet minimum separation requirements. Examples are as follows:

Panel CP1-EC-PRCB-02
Panel CP1-EC-PRCB-07
Panel CP1-EC-PRCP-06
Panel CP1-EC-PRCB-08
Panel CP1-EC-PRCB-09

Accordingly, TUEC shall reinspect all panels at CPSES, in addition to those in the main control room for Unit 1, that contain redundant safety-related cables within conduits, or safety and non-safety related cables within conduits, and either correct each violation of the separation criteria, or

demonstrate by analysis the acceptability of the conduit as a barrier for each case where the minimum separation is not met.

2. In several cases, separate safety and nonsafety-related cables and safety and nonsafety-related cables within flexible conduits inside main control room panels did not meet minimum separation requirements (Table 1 identifies examples of these cases). No evidence was found that justified the lack of separation.

Accordingly, TUEC shall reinspect all panels at CPSES, in addition to those in the main control room of Unit 1, and either correct each violation of the separation criteria concerning separate cables and cables within flexible conduits, or demonstrate by analysis the adequacy of the flexible conduit as a barrier.

3. The TRT found that the existing TUEC analysis substantiating the adequacy of the criteria for separation between conduits and cable trays had not been reviewed by the NRC staff.

Accordingly, TUEC shall submit the analysis that substantiates the acceptability of the criteria stated in the electrical erection specifications governing the separation between independent conduits and cable trays.

4. The TRT found two minor violations of the separation criteria inside panels CP1-EC-PRCB-09 and CP1-EC-PRCB-03 concerning a barrier that had been removed and redundant field wiring not meeting minimum separation. The devices involved with the barrier were FI-2456A, PI-2453A, PI-2475A, and IT2450, associated with Train A; and FI-2457A, PI-2454A, PI-2476A, and IT-2451, associated with Train B. The field wiring was associated with devices HS-5423 of Train B and HS-5574, nonsafety-related.

Accordingly, TUEC shall correct two minor violations of the separation criteria inside panels CP1-EC-PRCB-09 and CP1-EC-PRCP-03 concerning a barrier that had been removed and redundant field wiring not meeting minimum separation.

Table 1

Examples of Cases of Safety or Nonsafety-Related Cables
In Contact With Other Safety-Related Cables Within Conduits in Control Room
Panels

1. Control Panel CP1-EC-PRCB-02 - Containment Spray System

<u>Cable No.</u>	<u>Train</u>	<u>Related Instrument</u>
EG139373	B (green)	Undetermined
E0139010	A (orange)	Undetermined

2. Control Panel CP1-EC-PRCB-07 - Reactor Control System

<u>Cable No.</u>	<u>Train</u>	<u>Related Instrument</u>
EG139383	B (green)	Reactor manual trip switch
E0139311	A (orange)	Undetermined

3. Control Panel CP1-EC-PRCP-06 - Chemical & Volume Control System

<u>Cable No.</u>	<u>Train</u>	<u>Related Instrument</u>
EG139335	B (green)	LCV-112C
E0139301	A (orange)	Undetermined

4. Control Panel CP1-EC-PRCB-09 - Auxiliary Feedwater Control System

<u>Cable No.</u>	<u>Train</u>	<u>Related Instrument</u>
E0139753	A (orange)	FK-2453A
E0139754	A (orange)	FK-2453B
E0139756	B (green)	FK-2454A
EG139288	B (green)	FK-2454B

c. Electrical Conduit Supports

The TRT examined the nonsafety-related conduit support installation in selected seismic Category I areas of the plant. The support installation for non-safety related conduits less than or equal to 2 inches was inconsistent with seismic requirements and no evidence could be found that substantiated the adequacy of the installation for nonsafety-related conduit of any size. According to Regulatory Guide 1.29 and FSAR Section 3.7B.2.8, the seismic Category II and nonseismic items should be designed in such a way that their failure would not adversely affect the function of safety-related components or cause injury to plant personnel.

Accordingly, TUEC shall propose a program that assures the adequacy of the seismic support system installation for nonsafety-related conduit in all seismic Category I areas of the plant as follows:

1. Provide the results of seismic analysis which demonstrate that all nonsafety-related conduits and their support systems, satisfy the provisions of Regulatory Guide 1.29 and FSAR Section 3.7B.2.8.
2. Verify that nonsafety-related conduits less than or equal to 2 inches in diameter, not installed in accordance with the requirements of Regulatory Guide 1.29, satisfy applicable design requirements.

d. Electrical QC Inspector Training/Qualifications

The TRT examined electrical QC inspector training and certification files, and requirements for personnel testing, on-the-job training, and recertification. The TRT also interviewed selected electrical QA/QC personnel.

1. The TRT found a lack of supportive documentation regarding personnel qualifications in the training and certification files, as required by procedures and regulatory requirements. Also, the TRT found a lack of documentation for assuring that the requirements for electrical QC inspector recertification were being met. Specific examples are:
 - ° One case of no documentation of a high school diploma or General Equivalency Diploma.

- ° One case of no documentation to waive the remaining 2 months of the required 1 year experience.
- ° One case where a QC technician had not passed the required color vision examination administered by a professional eye specialist. A makeup test using colored pencils was administered by a QC supervisor, was passed, and then a waiver was given.
- ° Two cases where the experience requirements to become a Level 1 technician were only marginally met.
- ° One case of no documentation in the training and certification files substantiating that the person met the experience requirements.

Accordingly, TUEC shall review all the electrical QC inspector training, qualification, certification and recertification files against the project requirements and provide the information in such a form that each requirement is clearly shown to have been met by each inspector. If an inspector is found to not meet the training, qualification, certification, or recertification requirements, TUEC shall then review the records to determine the adequacy of inspections made by the unqualified individuals and provide a statement on the impact of the deficiencies noted on the safety of the project.

2. The TRT found a lack of guidelines and procedural requirements for the testing and certifying of electrical QC inspectors. Specifically, it was found that:
 - ° No time limit or additional training requirements existed between a failed test and retest.
 - ° No controls existed to assure that the same test would not be given if an individual previously failed that test.
 - ° No consistency existed in test scoring.
 - ° No guidelines or procedures were available to control the disqualification of questions from the test.
 - ° No program was available for establishing new tests (except when procedures changed). The same tests had been utilized for the last 2 years.

Accordingly, TUEC shall develop a testing program for electrical QC inspectors which provides adequate administrative guidelines, procedural requirements and test flexibility to assure that suitable proficiency is achieved and maintained.

The deficiencies identified with the electrical QC inspections have generic implications to other construction disciplines. The implications of these findings will be further assessed as part of the overall programmatic review of QC inspector training and qualification and the results of this review will be reported under the QA/QC category on "Training and Qualification."

II. Civil/Structural Area

a. Unable to Justify Reinforcing Steel Omitted in the Reactor Cavity

The TRT investigated a documented occurrence in which reinforcing steel was omitted from a Unit 1 reactor cavity concrete placement between the 812-foot and 819-foot $\frac{1}{2}$ -inch elevations. This reinforcement was installed and inspected according to drawing 2323-S1-0572, Revision 2. However, after the concrete was placed, Revision 3 to the drawing was issued showing a substantial increase in reinforcing steel over that which was installed. Gibbs & Hill Engineering was informed of the omission by Brown & Root Nonconformance Report CP-77-6. Gibbs & Hill Engineering replied that the omission in no way impaired the structural integrity of the structure. Nevertheless, the additional reinforcing steel was added as a precaution against cracking which might occur in the vicinity of the neutron detector slots should a loss of coolant accident (LOCA) occur. A portion of the omitted reinforcing steel was also placed in the next concrete lift above the 819-foot $\frac{1}{2}$ -inch level. This was done to partially compensate for the reinforcing steel omitted in the previous concrete lift and to minimize the overall area potentially subject to cracking.

The TRT requested documentation indicating that an analysis was performed supporting the Gibbs & Hill conclusion. The TRT was subsequently informed that an analysis had not been performed. Therefore, the TRT cannot determine the safety significance of this issue until an analysis is performed verifying the adequacy of the reinforcing steel as installed.

Accordingly, TUEC shall provide an analysis of the as-built condition of the Unit 1 reactor cavity that verifies the adequacy of the reinforcing steel between the 812-foot and 819-foot $\frac{1}{2}$ -inch elevations. The analysis shall consider all required load combinations.

b. Falsification of Concrete Compression Strength Test Results

The TRT investigated allegations that concrete strength tests were falsified. The TRT reviewed an NRC Region IV investigation (IE Report No. 50-445/79-09; 50-446/79-09) of this matter that included

interviews with fifteen individuals. Of these, only the alleged and one other individual stated they thought that falsification occurred, but they did not know when or by whom. The TRT also reviewed slump and air entrainment test results of concrete placed during the period the alleged was employed (January 1976 to February 1977) and did not find any apparent variation in the uniformity of the parameters for concrete placed during this period. Although the uniformity of the concrete placed appears to minimize the likelihood that low concrete strengths were obtained, other allegations were raised concerning the falsification of records associated with slump and air content tests. The Region IV staff addressed these allegations by assuming that concrete strength test results were adequate. Furthermore, a number of other allegations dealing with concrete placement problems (such as deficient aggregate grading and concrete in the mixer too long) were also resolved by assuming that concrete strength test results were adequate. The TRT agrees with Region IV that, while the preponderance of evidence suggests that falsification of results did not take place, the matter cannot be resolved completely on the basis of concrete strength test results, especially if there is any doubt about whether they may have been falsified. Due to the importance of the concrete strength test results, the TRT believes that additional action by TUEC is necessary to provide confirmatory evidence that the reported concrete strength test results are indeed representative of the strength of the concrete installed in the Category I concrete structures.

Accordingly, TUEC shall determine areas where safety-related concrete was placed between January 1976 and February 1977, and provide a program to assure acceptable concrete strength. The program shall include tests such as the use of random Schmidt hammer tests on the concrete in areas where safety is critical. The program shall include a comparison of the results with the results of tests performed on concrete of the same design strength in areas where the strength of the concrete is not questioned, to determine if any significant variance in strength occurs. TUEC shall submit the program for performing these tests to the NRC for review and approval prior to performing the tests.

c. Maintenance of Air Gap Between Concrete Structures

The TRT investigated the requirements to maintain an air gap between concrete structures. Based on the review of available inspection reports and related documents, on field observations, and on discussions with TUEC engineers, the TRT cannot determine whether an adequate air gap has been provided between concrete structures. Field investigations by B&R QC inspectors indicated unsatisfactory conditions due to the presence of debris in the air

gap, such as wood wedges, rocks, clumps of concrete and rotofoam. The disposition of the NCR relating to this matter states that the "field investigation reveals that most of the material has been removed." However, the TRT cannot determine from this report (NCR C-83-01067) the extent and location of the debris remaining between the structures.

Based on discussions with TUEC engineers, it is the TRT's understanding that field investigations were made but that no permanent records were maintained. In addition, it is not apparent that the permanent installation of elastic joint filler material ("rotofoam") between the Safeguards Building and the Reactor Building, and below grade for the other concrete structures, is consistent with the seismic analysis assumptions and dynamic models used to analyze the buildings, as these analyses are delineated in the Final Safety Analysis Report (FSAR). The TRT, therefore, concludes that TUEC has not adequately demonstrated compliance with FSAR Sections 3.4.1.1.1, 3.8.4.5.1, and 3.7.8.2.8, which require separation of Seismic Category I buildings to prevent seismic interaction during an earthquake.

Accordingly, TUEC shall:

1. Perform an inspection of the as-built condition to confirm that adequate separation for all seismic category I structures has been provided.
2. Provide the results of analyses which demonstrate that the presence of rotofoam and other debris between all concrete structures (as determined by inspections of the as-built conditions) does not result in any significant increase in seismic response or alter the dynamic response characteristics of the Category I structures, components and piping when compared with the results of the original analyses.

d. Seismic Design of Control Room Ceiling Elements

The TRT investigated the seismic design of the ceiling elements installed in the control room. The following matrix designates those ceiling elements present in the control room and their seismic category designation:

- | | |
|--|-----------------------|
| 1. Heating, Ventilating and Air Conditioning | - Seismic Category I |
| 2. Safety-Related Conduits | - Seismic Category I |
| 3. Nonsafety-Related Conduits | - Seismic Category II |
| 4. Lighting Fixtures | - Seismic Category II |
| 5. Sloping Suspended Drywall Ceiling | - Non-Seismic |
| 6. Acoustical Suspended Ceiling | - Non-Seismic |
| 7. Lowered Suspended Ceiling | - Non-Seismic |

According to Regulatory Guide 1.29 and FSAR Section 3.7B.2.8, the seismic Category II and nonseismic items should be designed in such a way that their failure would not adversely affect the functions of safety-related components or cause injury to operators.

For the nonseismic items (other than the sloping suspended drywall ceiling), and for nonsafety-related conduits whose diameter is 2 inches or less, the TRT could find no evidence that the possible effects of a failure of these items had been considered. In addition, the TRT determined that calculations for seismic Category II components (e.g., lighting fixtures) and the calculations for the sloping suspended drywall ceiling did not adequately reflect the rotational interaction with the nonseismic items, nor were the fundamental frequencies of the supported masses determined to assess the influence of the seismic response spectrum at the control room ceiling elevation would have on the seismic response of the ceiling elements.

Accordingly, TUEC shall provide:

1. The results of seismic analysis which demonstrate that the nonseismic items in the control room (other than the sloping suspended drywall ceiling) satisfy the provisions of Regulatory Guide 1.29 and FSAR Section 3.7B.2.8.
2. An evaluation of seismic design adequacy of support systems for the lighting fixtures (seismic Category II) and the suspended drywall ceiling (nonseismic item with modification) which accounts for pertinent floor response characteristics of the systems.
3. Verification that those items in the control room ceiling not installed in accordance with the requirements of Regulatory Guide 1.29 satisfy applicable design requirements.
4. The results of an analysis that justify the adequacy of the nonsafety-related conduit support system in the control room for conduit whose diameter is 2 inches or less.

5. The results of an analysis which demonstrate that the foregoing problems are not applicable to other Category II and nonseismic structures, systems and components elsewhere in the plant.

e. Unauthorized Cutting of Rebar in the Fuel Handling Building

The TRT investigated an alleged instance of unauthorized cutting of rebar associated with the installation of the trolley process aisle rails in the Fuel Handling Building. The claim is that during installation of 22 metal plates in January 1983, a core drill was used to drill about 10 holes approximately 9 inches deep. The TRT reviewed the reinforcement drawings for the Fuel Handling Building and determined that there were three layers of reinforcing steel in the top reinforcement layer of the slab. This reinforcement layer consisted of a No. 18 bar running in the east-west direction in the first and third layers, and a No. 11 bar running in the north-south direction on the second layer. The review also revealed that the layout of the reinforcement and the trolley rails was such that the east-west reinforcement would interfere with the drilling of holes along only one rail location. However, if 9-inch holes were drilled, both the first and third layers of No. 18 reinforcement would be cut. Design Change Authorization No. 7041 was written for authorization to cut the uppermost No. 18 bar at only one rail location, but did not reference authorization to cut the lower No. 18 bar. DCA-7041 also stated that the expansion bolts and base plates may be moved in the east-west direction to avoid interference with reinforcement running in the north-south direction. The information, described in DCA-7041, was substantiated by Gibbs & Hill calculations. If the ten holes were actually drilled 9 inches deep, then the allegation that the reinforcement was cut without proper authorization would be valid.

Accordingly, TUEC shall provide:

1. Information to demonstrate that only the No. 18 reinforcing steel in the first layer was cut, or
2. Design calculations to demonstrate that structural integrity is maintained if the No. 18 reinforcing steel on both the first and third layers was cut.

III. Test Programs Area

a. Hot Functional Testing (HFT)

The TRT reviewed a sample of the completed data packages for HFT preoperational test procedures, pertinent startup administrative procedures, NRC inspection reports, and the preoperational test index and its schedule. The TRT also inspected test deficiency reports

(TDRs) that were generated as a result of test deficiencies found prior to and during HFT.

1. Chapter 14 of the FSAR and Regulatory Guide 1.68 provide requirements for the conduct of preoperational testing. In reviewing test data packages, the TRT found that certain test objectives were not met. It appears that the Joint Test Group approved incomplete data packages for at least three preoperational hot functional tests. These were:

<u>Test Procedure</u>	<u>Deficiency</u>
ICP-PT-02-12, "Bus Voltage and Load Survey"	Because acceptable voltages could not be achieved with the specified transformer taps, they were changed. A subsequent engineering evaluation required returning to the original taps, but no retest was performed.
ICP-PT-34-05, "Steam Generator Narrow Range Level Verification"	Level detectors 1-LT-517, 518 and 529 were replaced with temporary equipment of a design that was different from that which was to be eventually installed
ICP-PT-55-05 "Pressurizer Level Control"	Level detector 1-LT-461 appeared to be out of calibration during the test and was replaced after the test. The retest approved by the JTG was a cold calibration rather than a test consistent with the original test objective, which was to obtain satisfactory data under hot conditions.

Accordingly, TUEC shall review all complete preoperational test data packages to ensure there are no other instances where test objectives were not met, or prerequisite conditions were not satisfied. The three items identified by the TRT shall be included, along with appropriate justification, in the test deferral packages presented to the NRC.

2. The TRT noted during a review of HFT completed test data that the JTG did not approve the data until after cooldown from the test. The tests are not considered complete until this approval is obtained. In order to complete the proposed post-fueling, deferred preoperational HFT, the JTG, or a similarly qualified group, must approve the data prior to proceeding to initial criticality. The TRT did not find any document providing assurance that TUEC is committed to do this.

Accordingly, TUEC shall commit to having a JTG, or similarly qualified group, review and approve all post-fueling preoperational test results prior to declaring the system operable in accordance with the technical specifications.

3. The TRT pointed out that in order to conduct preoperational tests at the necessary temperatures and pressures after fuel load, certain limiting conditions of the proposed technical specifications cannot be met, e.g., all snubbers will not be operable since some will not have been tested.

Accordingly, TUEC shall evaluate the required plant conditions for the deferred preoperational tests against limiting conditions in the proposed technical specifications and obtain NRC approval where deviations from the technical specifications are necessary.

4. Data for the thermal expansion tests (which have not yet been approved by the JTG) did not provide for traceability between the calibration of the measuring instruments and the monitored locations, as required by Startup Administrative Procedure-7. The information was separately available in a personal log held by Engineering.

Accordingly, TUEC shall incorporate the information necessary to provide traceability between thermal expansion test monitoring locations and measuring instruments. TUEC shall also establish administrative controls to assure appropriate test and measuring equipment traceability during future testing.

b. Containment Intergrated Leak Rate Testing (CILRT)

The TRT reviewed the data package for the CILRT performed on Unit 1, and discussed the conduct of the test with TUEC and NRC personnel who participated in or witnessed it.

Apparently after repairing leaks found during the first two attempts, the third attempt at a CILRT was successful. It was successfully completed after three electrical penetrations were isolated because the leakage through them could not be stopped. Though the leaks were subsequently repaired and individually tested with satisfactory results, NRC approval was not obtained to perform the CILRT with these penetrations isolated. In addition, leak rate calculations were performed using ANSI/ANS 56.8, which is neither endorsed by the NRC nor in accordance with FSAR commitments.

Accordingly, TUEC shall identify to NRC any other differences in the conduct of the CILRT as a result of using ANSI/ANS 56.8 rather than ANSI N45.4-1972. Additionally, TUEC shall identify to NRC all other deviations from FSAR commitments.

c. Prerequisite Testing

The TRT reviewed FSAR commitments, startup administrative procedures, prerequisite test records, craft personnel qualification records, and discussed them with startup and craft management personnel. The TRT also observed test support craft personnel at work and interviewed some of them to gain familiarity with their attitudes and capabilities.

The review of test records revealed that craft personnel were signing to verify initial conditions for tests in violation of startup Administrative Procedure-21, entitled: "Conduct of Testing" (CP-SAP-21). This procedure requires this function to be performed by System Test Engineers (STE). Startup management had issued a memorandum improperly authorizing craft personnel to perform these verifications on selected tests.

Accordingly, TUEC shall rescind the startup memorandum (STM-83084), which was issued in conflict with CP-SAP-21, and ensure that no other memoranda were issued which are in conflict with approved procedures.

d. Preoperational Testing

The TRT assessed the preoperational test program by reviewing administrative procedures, interviewing startup personnel, and examining test records, schedules, system assignments, subsystem definition packages, and the master data base.

Problems found with test data are addressed in section III.a of this enclosure. The TRT also found that STEs were not being provided with current design information on a routine, controlled basis, and had to update their own material when they considered it appropriate.

Accordingly, TUEC shall establish measures to provide greater assurance that STEs and other responsible personnel are provided with current controlled design documents and change notices.