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

MAR 11 1985

Docket Nos.: 50-445
and 50-446

MEMORANDUM FOR Chairman Palladino
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech

FROM: Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: BOARD NOTIFICATION - SUMMARY OF MEETING BETWEEN NRC STAFF AND TEXAS UTILITIES GENERATING COMPANY CONCERNING STATUS OF THE COMANCHE PEAK RESPONSE TEAM EFFORTS IN RESPONDING TO THE NRC TECHNICAL REVIEW TEAM FINDINGS IN THE ELECTRICAL/INSTRUMENTATION AREA (BOARD NOTIFICATION NO. 85- 027)

This Notification is being provided to the Commission in accordance with the revised Commission's notification policy of July 6, 1984, to inform the Commission on all issues on the cases before the Commission.

By Board Notification No. 84-160 dated September 21, 1984, the NRC staff provided the ASLB a transcipt of a meeting held in Bethesda between the Technical Review Team (TRT) and the Texas Utilities Generating Company (TUGCO). The meeting transcript and its enclosed letter documented the TRT finding and need for additional information in the electrical/ instrumentation areas.

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DISTRIBUTION LIST FOR BOARD NOTIFICATION

Comanche Peak Units 1&2
Docket Nos. 50-445/446

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On Thursday, February 28, 1985, a meeting was held between the NRC staff and TUGCO to discuss the status of the Comanche Peak Response Team efforts in responding to the TRT findings in the electrical/instrumentation area. A copy of the Summary of Meeting, with its enclosed transcript, is provided for your information.

The parties to the proceeding are being notified by copy of this memorandum.

Frank J. Miraglia for

Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

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Parties to the Proceeding
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAR 06 1985

Docket Nos.: 50-445
and 50-446

APPLICANT: Texas Utilities Generating Company (TUGCO)

FACILITY: Comanche Peak Steam Electric Station, Units 1 and 2

SUBJECT: SUMMARY OF MEETING BETWEEN NRC STAFF AND TEXAS UTILITIES GENERATING COMPANY TO DISCUSS THE STATUS OF THE COMANCHE PEAK RESPONSE TEAM EFFORTS IN RESPONDING TO THE TECHNICAL REVIEW TEAM FINDINGS IN THE ELECTRICAL/INSTRUMENTATION AREA AT COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

A meeting between the NRC staff and Texas Utilities Generating Company (TUGCO) was held on Thursday, February 28, 1985. The meeting was held at the Comanche Peak Nuclear Operations Support Facility near Glen Rose, Texas. The purpose of the meeting was to discuss the status of TUGCO's Comanche Peak Response Team efforts in responding to the NRC Technical Review Team findings in the electrical/instrumentation area. The meeting was transcribed and a transcript is enclosed. Attendance at the meeting is included in the transcript.

The TUGCO Comanche Peak Response Team presented the results of additional inspections they had conducted in response to each of the Technical Review Team findings. The evaluation of the hardware situation appeared to be nearing completion. The staff requested additional information concerning the safety significance of the hardware deficiencies identified.

S B Burwell

S. B. Burwell, Project Manager
Licensing Branch No. 1
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Enclosure: As stated

cc: See next page

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COMANCHE PEAK

MAR 0 6 1985

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ORIGINAL

UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF: DOCKET NO:

MEETING BETWEEN TEXAS UTILITIES AND THE NUCLEAR REGULATORY COMMISSION REGARDING COMANCHE PEAK STEAM ELECTRIC STATION - ~~PIPING AND SUPPORT DESIGN~~ APPLICANTS' PROGRAM PLAN - TRT ELECTRICAL ISSUES

LOCATION: GLEN ROSE, TEXAS PAGES: 1 - 85

DATE: THURSDAY, FEBRUARY 28, 1985

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MEETING BETWEEN TEXAS UTILITIES AND THE
NUCLEAR REGULATORY COMMISSION REGARDING
COMANCHE PEAK STEAM ELECTRIC STATION -
APPLICANTS' PROGRAM PLAN -
TRT ELECTRICAL ISSUES

Visitor's Center
Auditorium
CPN Power Plant
Texas Farm Route 201
Glen Rose, Texas

February 28, 1985

PURSUANT TO NOTICE, the above-entitled matter commenced at 8:47 a.m.

PRESENT:

VINCENT S. NOONAN	NRC/Comanche Peak Director
JOHN BECK	TUGCO
MARTIN JONES	SRT
IVEN VOGELSANG	TUGCO
SAM MARTINOVICH	Gibbs & Hill
WOODY STROUPE	W. Stroupe & Associates
ANGELO MARINOS	NRC

TERRY G. TYLER	ENERGEX/CPRT
BARBARA BOLTZ	CASE
JOSE CALVO	NRC
SPOTTSWOOD B. BURWELL	NRC/NRR/DL/LBH
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D. L. KELLEY	NRC/Region IV/SRRI(O)
W. F. SMITH	NRC/Region IV/RRI(O)
JACK REDDING	TUGCO
PAUL AREEMO	TPOL
T. R. VARDARO	Gibbs & Hill
LIONEL BATES	TERA
TONY BUHL	ENERGEX
DAVID REED	Dallas Morning News

PROCEEDINGS

8:47 a.m.

MR. NOONAN: Good morning, ladies and gentlemen.

My name is Vince Noonan, the Director for the Comanche Peak Project.

I guess we are here this morning basically to listen to the Applicant tell us about his Program Plans and how he is proceeding on what we call the TRT issues.

Today we will be addressing the electrical issues.

John, I think I'd like to just make one statement to start out here. I said earlier I am going to leave here; I won't be here very long this morning. I have to take care of some business and I'm goi g to use the residence trailer back of the site.

But before we get there, these next set of meetings we are talking about here, the one today and then next week, we are here to listen to your Program Plan and what you plan to do about things and how you are going to proceed about it.

In reading the safety evaluations back in Washington, when I go through them, I look at some of

the things the Staff has put in there, the various actions and some of the things we've put in there. And I would like you to at least come back to us and tell us in some cases where you think there are better ways, maybe a better way of doing things or a more efficient way of doing things.

I guess I get concerned a little bit when I read somewhere where the Staff requires some certain analysis to be done.

That's fine. If that's what is needed, we'll do that; but I guess I'd like to address that that's really what is necessary. There are other ways to get into it.

Some of these analyses can get very long and they can't really be as conclusive as some other course of action.

So whatever area we are talking about, I would like to have that open for discussion. I'll leave it up to you, your prerogative.

If you think there's a better way of doing it, then you ought to tell us about it.

Feel free to do that. I know we are in a forum that we don't like to operate in too well, the NRC doesn't like to operate in too well, because we like to have an open technical discussion. We are

being recorded and we are being watched, and that's fine.

I would like to open it up, though, into what I call a normal discussion between us and yourselves, and we'll discuss the pros and cons of these things.

With that, I think I'll let you go ahead and start it.

MR. BECK: Clearly, Vince, that's the spirit in which we are going to be making our presentations today and next week, is to provide a full open exchange and a thorough ventilation of the issues, and your comments with regard to providing alternatives to addressing some of these questions, we've also taken in good spirit and have in some instances provided some options and alternatives that we think, given the questions on the table, will get at root causes and then subsequently to any generic implications that evolve from looking at the specific set of questions.

Today we are going to be reviewing our progress on the electrical TRT issues, as you indicated earlier.

I'd like to give some background and perspective, and especially relate today's meetings to

previous meetings that we've had, so that there's a common thread established, particularly in the record.

I will be introducing Martin Jones, our Review Team Leader for the electrical area, who will lead today's discussion.

By way of background, we received the first TRT letter addressing this particular issue on September 18th, '84, and submitted a Program Plan and action plans in early October.

We had public meetings in Bethesda on October 19th and the 23rd to receive NRC comments.

As a result of those meetings, we modified our Program Plan, the over-all guiding document for all the issue-specific action areas to add more objectivity, to place greater emphasis on root cause and generic implication determinations, and to clarify other aspects of the program.

The action plans that will be discussed today and at next week's meetings will reflect the following differences from those that you saw in October:

First, we have reviewed and revised with the new Review Team Leaders all the action plans. If you recall, previously we had assigned those individual within the TUGCO organization who were most familiar

with the issues being discussed; and being responsive to the question of objectivity, that's when we brought in the outside Team Leaders. Martin Jones is only one example.

We've also revised the action plans, and they have been reviewed and approved by the reconstructed senior review team, once again adding third party outside people.

The action plans reflect consideration of SSER-7, where it's applicable to the particular issues in question.

They incorporate consideration of NRC concerns expressed with the first versions that came in the October meetings, and then subsequently in the January 24 letter from Staff.

They include expansions that resulted from our implementation process.

We committed to expanding samples when it was warranted by the results we found, and we have in fact made such sample size expansions, particularly in the electrical area.

We've made substantial progress on many of the issues, especially those that were included in the September 18 and November 29 letters, and you'll be hearing specific examples of that progress.

The Review Team Leaders, Martin Jones today, and others later, will discuss their status on these issues.

I want to emphasize our commitment to thorough and objective reviews of all these questions.

What you'll hear today and next week is a clear demonstration of the seriousness with which we view all of these concerns.

Turning now to today's presentation and Martin Jones, our Review Team Leader for the electrical area, Martin has over 25 years of experience in the power industry.

For the last five years, Martin has been a private consultant to the nuclear industry in the electrical and QA/QC areas.

Previously, he held various positions with South Carolina Electric & Gas Company, including Quality Control Manager for the Virgil Sumner Nuclear Project; and subsequently, he was the company's Manager of Construction.

Mr. Jones' nuclear experience began in 1959 with the Carolina - Virginia Tube Reactor, where he was the staff electrical engineer and instrumentation supervisor.

He will be leading today's discussion of

action plans and the results in the electrical area.

We would like this to be an open discussion of the action plan itself and our results.

Feel free to interchange as the presentation goes forward. It has been structured so that it will accommodate that kind of active involvement.

If there are no further questions, I'll turn it over to Martin and he can get started.

MR. NOONAN: There's just one other thing. When I was making my opening remarks, one thing I didn't mention that also I would like you to come back to us on.

This is in regard of certain things we talk about, whether they are safety-related or not safety-related.

As you start to see more and more of the SER's, you will see in there that there's a number of things the NRC Staff looked at that were not safety-related equipment.

Under the normal course of doing business, the NRC Staff would not even have looked at these things.

We would have turned them back to you and said they are more of an economic impact on you than they are -- they are of no safety significance to us,

and more of an economic impact on you.

These things are in here. I'm not sure in this particular area there are any of those, but in some of the areas there are those kind of things.

I think you need to look at those and you need to come back to us. If we say something has safety significance and you disagree, you have to tell us, because you know your plants a lot better than we do.

You know, we are in Washington. We are regulators, and we look at the regulations.

It's always the utility that makes the decision of what's safety-related and what's not safety-related, and we look at it from an auditor's standpoint.

We usually concur in those decisions or we might have some questions of some certain things we think should be on that list. But clearly, it's your list to maintain and to determine.

So I think as we go through it, particularly for the next few days, if those kind of things are in error, we ought to bring it out on the record and show that these are non-safety-related items we're talking about here.

The Staff can explain why they looked at

it, and we can go from there.

MR. BECK: Good. I appreciate that input.

MR. CALVO: Just for the record, I guess Mr. Noonan forgot to introduce the other two members of the Nuclear Regulatory Staff.

I'm Jose Calvo. I was the group leader for the electrical instrumentation review at Comanche Peak.

Here to my right is Angelo C. Marinos, who is also working with me in the electrical instrumentation group.

That's all I have to say.

MR. BECK: Thank you.

Martin, would you do your thing.

MR. JONES: Okay, thanks, John.

We are going to go right ahead and get into the specific action item plans. We are going to use the viewgraph and we've got just a couple of slides that we are going to show as well.

Again, as John has said, please feel free at any time just to ask questions. We'll be glad to stop whenever you like. If there are any questions, we'll be happy to address them as we go.

The first thing I want to cover is the issues which have been assigned to us, that is,

particularly to me. There are nine in all.

1.A.1. regards the heat-shrinkable cable insulation sleeves.

1.A.2., inspection reports on butt splices.

1.A.3. is butt-splice qualification.

1.A.4. is agreement between the drawings and field terminations. That is, are the conductors terminated as shown on the drawings.

1.A.5. involves the nonconformance reports, specific nonconformance reports which were written on vendor installed AMP, which is a brand-name, terminal lugs.

1.B.1. regards the use of flexible conduit in the control panels to maintain separation.

1.B.1. is flexible conduit to flexible conduit separation; and related to that is 1.B.2., which is flexible conduit to cable separation. Again, we are talking about separations in the panels.

Item 1.B.3. is regarding conduit to cable tray separation; and Item 1.B.4. regards barrier removal. The barrier was a barrier in the control panels which have been removed.

I'm going to discuss with you Items 1.A.1. through 1.A.5., and Item 1.B.4.

Items 1.B.1., 2., and 1.B.3. will be

discussed with you by Sam Martinovich, who is a Gibbs & Hill engineer on this particular issue.

I will go through them in the order which you have just seen. A couple of them will be combined, that is, 1.B.2. and 1.B.3., the butt-splice qualifications are sort of intertwined, so I will discuss those as one subject.

Item 1.A.1. is the Nuclear Heat - Shrinkable Cable Insulation Sleeves.

A little background on this: The sleeves are in most cases provided by the RayChem Company, the ones that are under discussion here now.

They are insulation sleeves which are slipped over terminations or joint splices and which can be shrunk tightly around the cable conductors to provide both insulation and environmental seals. They are used particularly where there are harsh environmental areas.

In this particular instance, the issue involves a lack of awareness on the part of the QC inspectors as to where the heat-shrinkable cable sleeves were required to be installed and where the installation was required to be witnessed by the QC inspectors.

In this area, our initiative in this area

involves the following. It's divided into two parts.

The first part was that we would review the QC, that is, the inspection procedures, and the installation procedures, and to make revisions to better define where these inspections were required and what the actual installation requirements were for these things.

In looking at some of the documentation reviews that we're going through now, it's becoming even more apparent to us now that we need to even further improve those procedures. We need to clarify them even more.

So we are in the process of doing that now, and I think when we are finished with the program, we are going to have a very useful set.

Part two of the program involved a sampling plan, which was based on the 95 percent confidence level that no more than five percent of the inspection reports would be defective.

That is, in reviewing the inspection reports, make sure that these inspections were witnessed.

So we have identified in this program a little over 1100 places in Unit 1 where the heat-shrink installations were used. That is, of motor terminations, connections between cables and electrical penetrations

and in areas of that type where they were actually used.

Those cables were identified in the sampling plan, samples from those 1100. To get the 95/5 confidence factor, we selected 60 out of those which had an acceptance of zero, with an expandable factor in there to expand it to 95 in case there was one failure.

Any more than that, above the -- out of that 95 requires, using this statistically-based sampling plan, a hundred percent reinspection, a review of all those, a hundred percent review of all those inspection reports.

Based on the first 60, and going through it the first time, and reconciling all the things that need to be reconciled -- for example, what revision of the procedure was in use at the time that that inspection was made, what inspection report was required at that time, and going through the whole thing trying to reconcile them with those things, we felt at that time that there was a failure that we could not reconcile.

We expanded it to the next 35. In re-reviewing that, we are still reviewing that one failure, and we are not positive that it was a failure to

actually witness the splicing, maybe a failure of something else.

But we are still looking at this plan, but we have gone to the second 35. We are in the process of reviewing those now.

We hope that we are going to be able to reconcile all our findings.

MR. MARINOS: Martin, can I interrupt you a minute?

MR. JONES: Sure.

MR. MARINOS: This one failure that you mentioned, is that failure to document or failure in the actual physical installation? What was the nature of the failure?

MR. JONES: That reject that's listed under Page 1 right there, in fact, had to do with the termination, not with the heat-shrink installation itself, and that's why we still have a question as to whether that was actually a failure of somebody to witness the heat-shrink installation.

MR. MARINOS: But the documentation was there that it had been performed?

MR. JONES: There was some documentation that it was witnessed, verified.

MR. MARINOS: Verified?

MR. JONES: Verified, right.

MR. CALVO: You say that the total number of cases with the heat-shrinkable sleeves used were 1100.

MR. JONES: Over 1100.

MR. CALVO: What is important to know, you've got to know what the total population is.

MR. JONES: That's right.

MR. CALVO: So based on that total population, you say you picked up 60 records?

MR. JONES: Sixty records.

MR. CALVO: It looks to me that that is kind of low.

MR. JONES: That's to give us 95 percent confidence that no more than 5 percent of those will not have that record.

MR. CALVO: But that was based on what kind of a population, over 1100?

MR. JONES: Over 1100.

MR. CALVO: But as the population increases, then the sample also would increase?

MR. JONES: It would also increase, if that's the case, yeah.

MR. MARINOS: Sixty gives you a 95 percent confidence level with no failures?

MR. JONES: Five percent failure; five per cent.

MR. MARINOS: Who has determined the 60? That is statistical basis?

MR. JONES: Yes. We have a statistical consultant on board with us almost full time that works here, and this was based on his recommendation as to how we came up with it.

MR. MARINOS: That's something that I would have to ask our statisticians. I'm not a statistician, so I --

MR. JONES: Neither am I.

MR. MARINOS: So 60 is the number that would give you that confidence level?

MR. JONES: That's right, 95/5.

MR. MARINOS: I was under the impression it was a larger number.

MR. JONES: Not in this case.

MR. MARINOS: What do you mean, "not in this case"?

MR. JONES: We'll get to one on the terminations where we have a 95 with only one percent rejection factor, which does give you a much higher number.

MR. MARINOS: Well, in terms of how many,

what is the sample, how large a sample you need in order to get this confidence level of 95 percent, I was under the impression that that is a larger number you would have to inspect in order to get this confidence level of 95 percent.

I thought it was in the hundreds. It's something I'll have to check with our statisticians.

MR. JONES: Okay. Fine. We'll be glad to go over that.

MR. MARINOS: On various subjects, not just terminations, but other things that we do to determine the confidence level.

MR. JONES: Sure.

MR. CALVO: But again, you answered to say "over 1100." That is not the correct answer. The answer is, "We have so many of these cases," and based on how many cases, you pick out a sample to give you 95/5. Okay?

MR. JONES: Exactly.

MR. CALVO: Based on that sample, then you find what the rejection criterion is, at 5 percent.

So you've got to know -- for us to check it to see if you are correct, we've got to know how many records do you have, how many cases. Then based on that, the sample had been selected.

MR. JONES: That's exactly right. Precisely

MR. BECK: Jose, if I can interject, because we are using a sampling approach, we are very sensitive to making certain from a statistical standpoint that it's a properly structured piece, because we are doing it in more than one instance.

The consultants that we have brought in in this regard are absolutely topnotch and the action plans as they specifically address samples will reflect that constant input.

They are assisting across the board with all the issue team leaders as they encounter these, and the written documentation will reflect very precisely what the bases were, what the sample sizes were, what the criteria are.

I think you'll find it sound.

MR. JONES: What you say is absolutely right. You have to know the exact 1128.

MR. CALVO: The other thing, I think, we talked about at a meeting in Bethesda on this same subject.

Once you start with the sample that you are going to take, you should concentrate on those systems which, upon their failure, they give you the greater probability for potential risk, you know, a

potential problem of core melt-down in the reactor.

So whatever the sample, if you only come out with 60, I think it will be of interest to everybody where you are concentrated, with the diesel generator, or are you concentrated with the emergency core cooling system, whatever.

I think that's interesting.

MR. JONES: I think when we get into termination you will see exactly how we address what your concern is there.

MR. CALVO: Okay.

MR. JONES: So the status of this particular item is right now that we have reviewed 90. We are still in the status of review.

We have not yet determined that we will have to expand that sample in this particular area.

That is the status, and we are almost, in this case, on this one, practically at the end of our work and at the end of our review on 1.A.1.

Okay. These butt splices -- and as I mentioned earlier, I'm going to combine the discussion of 1.A.2. and 1.A.3. on butt splices.

This is an area where we have had a number of problems. We want to discuss them with you.

I think there's certainly some negative

aspects to it, but there's some positive aspects to it, too.

The concerns that TRT found with the butt splices included: That inspection reports did not indicate that the witnesses of the splice installation was done; the drawings did not reflect the location of all the butt splices.

We were concerned that the butt splices were not qualified for the service conditions which they were used.

That the butt splices were not staggered; that is, they were not adjacent to each other and not touching one another.

And that there was a lack of provisions in the installation procedures, and that should also include the inspection procedures, to verify the operability of those circuits where those things were used.

I would like to give you a little backgroun on butt splices.

A couple of years ago it was recognized that there were a number of changes that were going to be required in some of the control panel wiring.

These were for a number of reasons. They were primarily in the control and spreading room panels

In some cases they were in other areas.

These were either due to logic changes, or there were some other reasons, human factors, for example, maybe TMI changes, or in some cases it was simply to better re-arrange the train cables in the panels.

But for whatever reason, the AMP pre-insulated environmental seal butt splices were selected, which is a butt-splice sleeve which has the insulation as sort of an integral part to it.

We've got a slide which shows this. An FSAR amendment was submitted to provide for the use of these.

I think that was Amendment 44. It was submitted to allow for the use of these splices in the panels.

Could we have that first slide, please.

These drawings were taken from the AMP installation guides that were used here on the project.

The left-hand side is the acceptable method of using it. The right-hand side shows one, for example, where the insertion depth is not -- if you'll look where it's marked No. 6, for example, on there shows that it's not inserted as far as it is on No. 6 on the left-hand side, all the way to the wire

stop.

We have spent a lot of time on this and a lot of effort. We'd like to go into that in some detail, if you'd like.

We have one more slide that shows where these splices -- an example of where these splices were used.

This is the inside of one of the control panels. This particular one is CR-13. It's a little difficult to see the splices. They are small.

This is just an example of the kind of panel and the type of wiring where these are encountered

In this particular panel there are quite a few of them. I'm sorry the slide is not a little bit clearer, but if you look closely, they are visible. They are not very much bigger than the conductor itself.

Okay. As I mentioned, the FSAR Amendment 44 was submitted to allow for the use of these, but in using them the issue of staggering was not included in that amendment to the FSAR.

So it was recognized shortly, I guess, after the TRT inspection that staggering had neither been included in the procedures nor had it been accomplished when the splices were made.

So it was recognized early on that that type thing had to be corrected.

I'd like to also point out that the sleeves that were used are very similar to the AMP, which is the same manufacturers who manufacture most of the terminals that are used in those panels and elsewhere throughout the plant.

So in the process of doing this, there were a number of these control instrumentation cables spliced and reterminated and they were primarily in these cabinets.

To date we have identified 615 of those splices. That's in these panels in the cable and spreading room and outside, including a few that are in some other control centers and other places.

Could I have the next?

MR. CALVO: Excuse me. This is from Unit 1 or Unit 2 only?

MR. JONES: We're talking about Unit 1 right now. I think we're doing the best to not use them at all in Unit 2.

The fact is that Unit 2, before that -- in fact, not all that work has been done yet, if I'm correct, and they recognized these modifications and changes that needed to be made before those cables were

put in to begin with. So it hasn't been the same sort of problem in Unit 2.

MR. CALVO: So the question, then, any systems in there that are shared between Unit 1 and 2 where you may have bad splices; that's what I'm asking.

MR. JONES: I suppose it would include Unit 1 in common in what we've already looked at.

I will say specifically, we have not looked at Unit 2 at this point, anyway, just at Unit 1 in common.

So far, here are the initiatives we've taken and I'm going to discuss these in phases because it kind of in a logical manner falls into these phases.

In Phase 1, these were the things that we recognized from the beginning: That the cables had to be retrained so that the butt splices would not touch one another.

We realized that we needed to revise the procedures, the installation and the quality control procedures for tighter control.

We agreed with you that we needed to -- that the butt-splice sleeves needed to be qualified for the service conditions in which they were used; and this is based primarily on the manufacturer's information on those.

And we agreed, also, that we needed to review additional inspection reports for witnessing the splices.

During this period of time when the TRT was here, I think you looked at about 12 inspection reports and found some problems with those inspection reports.

And then prior to, at least, the restructuring of the SRT, TUGCO folks had looked at 12 additional ones, but not based on any statistical sample or any, really, scientifically based sample, but just sort of a random sample that they had done.

Phase 2 was predicated on failures in Phase 1 which occurred.

In addition to that, I think your comments on the original action plan had requested that Phase 2 be conducted regardless of any outcome of Phase 1.

So in any case, for whatever the reason, we have proceeded to Phase 2 in the butt-splice inspection.

Phase 2 consisted of a third party inspection of the butt splices in the panels; that is, physical inspection of the butt splices in the panels to see that they were in conformance with the drawings, that they were properly terminated, that the right

sleeves were used, that the right crimp was used and the right tool was used, the things of a normal inspection nature which take place during any installation.

Phase 2 was also to update and correct the design documents. Primarily, that is that the drawings correctly reflect the location of splices within those panels.

Phase 2 would also correct the hardware deficiencies that were found; that is, bad splices for whatever reason. Any hardware deficiencies that needed to be corrected, they would be taken out, replaced or whatever.

It would also include a third party review of all the inspection reports; that is, inspection reports of all the cables covered by these butt splices, the 600 conductors, however many cables that was.

Okay. I'd like to give you just a summary. We are still reviewing this and I'd like not to be pinned down on these exact numbers, but I want to give you some numbers on the things that we found during this inspection.

The physical inspection is complete. We are still doing the documentation reviews and we are still reconciling some of these things.

Let me give you some numbers of things we found.

There were 26 cases of plain unauthorized butt splices being made. That is, there was not a design change authorization.

And, again, if you don't -- We are still reviewing the numbers, but I want to give you an idea of what they are. Please don't pin me down to them.

There were in excess of a hundred splices on the drawings which were not found in the field, and we may need a little explanation on that.

I think the best explanation for that is that the field requested that splices be authorized in looking through and seeing what cables were going to have to be moved. And I think probably what happened in this case was when they actually had to move the cables, they found that the conductors indeed were long enough to reach where they needed to be reached, but the glitch was in not getting back to the engineering so that they correctly reflected it in the drawings.

There were 23 crimps, that is, the impression on the butt splice, where the wrong tool was used. That is, the manufacturer specifies for each sleeve size and type what tool should be used.

In 23 cases the wrong one was used.

In eight cases the wrong sleeve was used. That is, the wrong size sleeve was used for a particular conductor size.

In ten cases the insulation, the integral insulation to the sleeve had been split. Whether it was caused by the tool or maybe by heating it, overheating when it shrunk, it was split.

In three cases we found strands curled. That is, all of the strands in the conductor didn't get inside the barrel.

And in fourteen cases there was an improper crimp. Generally, this means that the tool wasn't placed in the correct location on the butt splice when it was found.

In addition to that, we found other deficiencies -- I won't give you any numbers on those -- where at least there was a termination error or there were drawing errors. There was no visible dot code on the splice. When you squeeze these with the right tool, it leaves a little tiny dot impression and indent so that you can go back and later see that the right tool was used, either one dot or two dots. In this case you just couldn't see it. It doesn't necessarily mean it was bad, but you couldn't see it.

The stagger was certainly not what it should have been, and that has been or is being corrected.

Either wrong color or the wrong size wire was spliced on. We are still looking into that.

And then outside of what was specified in our inspection procedures, what we asked the inspectors to specifically look for, we also asked them to notice other things.

These included damaged insulation that they ran across. They identified some separation problems.

There were improper support. That is, in some cases the bundle might then pull it down against the termination lugs. You know, it's not properly supported.

One of the problems that we are looking into further was that there's a possibility -- if you will recall the first slide that we saw -- that there was not complete insertion of the conductor into the sleeve; and that is one that bothers us because it's not something you can determine from outside inspection of it. So we are looking into that.

We are going to consider all these things, but what may be most significant, what we feel the

most significant of these, and that is where the wrong crimp tool was used, where there was an improper crimp, where we used the wrong sleeve or the wrong wire size, either case, where there was improper insertion depth, if that is the case. Those are the four items with which we have our primary concern.

The actual safety significance, that is, the over-all safety significance as it applies to the operation of the plant will be determined in each case where we have a bad crimp, looking back at the function of what that particular conductor was and whether it may or may not have functioned in that plant.

So that's part of our ongoing work, is to look into the safety significance of those particular things.

Could I have the next chart on that, please? Okay.

I would like to say that the documentation review, that is, the inspection reports, that's been started.

I think they have turned in initial findings on that. We have not reviewed those and that is in progress.

So all these are going under review. There's obviously a need for a Phase 3. Phase 2 is

not going to resolve all the problems that we have.

Phase 3, I said, we will need to evaluate the safety significance in those specific areas.

We need to investigate related areas. That is, this is not limited to butt splices, if there are other things that are related to that that may also be affected by the things that we find wrong here.

The first thing you would think of would be, say, terminations or the drawing change control, things of that nature.

We don't feel the terminations are, but there may be other areas and we are going to look into those.

We are going to determine the root cause, how did this all come about and why is this situation existing.

We are going to look at the QA and QC implications of what we've found.

And then we are going to take long-term corrective action.

Okay. What we've tried to do is to summarize the concerns that we found with butt splices and what we're going to do as far as the over-all corrective action goes.

The first three concerns, for example, the wrong crimp tool was used, wire strands were curled or the insulation was split or improper shrink, whatever, in those cases, certainly, the short-term action is going to be replace those things.

In order to do that and before we replace them, what we're doing now is making sure that the procedures that we use are --

MR. MARINOS: One point of clarification.

These determinations were made on a hundred percent inspection of all the butt splices that you were able to find.

MR. JONES: Yes.

MR. MARINOS: So the specific deficiencies, wrong crimp tool or wire strands is on specific ones? There is no hidden ones?

MR. JONES: No. There's no statistical analysis or anything like that. These are specific ones where we found a specific problem. That's correct.

Before we can replace them, certainly, we need to look at the procedures. We need to make sure that the electricians that are going to do this work are adequately trained, and that the inspectors are also adequately trained to do this.

The procedures are in the process of review

now. I've looked at them; other folks have looked at them; outside third-party people have looked at them.

Next week the AMP training trailer or truck or whatever they have is going to be down here to specifically talk to the people who are going to do this work. We are going to have the factory people come in and make sure that they are adequately trained, both the inspectors and the electricians, before we start this work again.

Those would apply to the first three.

We are going to correct, certainly, any unsatisfactory terminations. In doing the butt splices we also inspected the terminations associated with that butt splice.

We looked at the butt splice and went to the end of the cable and looked at those terminations. And this is added -- In looking at these terminations -- when we get to 1.A.4. we will discuss this a little bit more, but it's added to the number that we looked at under terminations.

We further improved our confidence in those by looking at these. We found one where the white and the black wire were rolled. The function was still okay. It was still in contact and it still worked okay, but we are going to correct that.

We feel like that was an isolated incidence and no long-term corrective action is needed in this case.

Where inspections were inadequate, certainly I would have to say, and I don't think there would be any disagreement, that in finding the number of things that I've listed for you today, that inspections were not adequate either.

So we've got to go back and look at training and certification requirements. We've got to look at the procedures, and we've got to do some inspector retraining for this particular thing.

The next concern --

MR. MARINOS: But as far as butt splices are concerned, you have made a hundred percent inspection, so you have it narrowed down to the specific ones that are of question.

MR. JONES: Yes.

MR. MARINOS: They may be adequate, but nevertheless in question. So you can repair those one way or the other, and this whole issue could be put to bed.

MR. JONES: But we want to make sure that the repairs are done.

MR. CALVO: We started on the premise in

this whole effort that butt splices shall not be permitted in the installation of a nuclear power plant.

We accepted -- At the time it was determined it would have been counter-productive to rip all the cables and put the new ones in to satisfy the requirement.

I think from the standpoint of safety it would be the wrong thing to do. So we had to find out, see what you had there and determine if what you had there had been accomplished in the right manner.

I think it will be -- and, again, keep in mind that we only accepted what you had on a limited basis, and maybe 600 may be considered to be a limited basis, but I think it would be of interest to all, and to you, too, is where those splices are and on what kind of systems they participate.

To me, that's the most important safety significance.

MR. JONES: You are exactly right, exactly right.

MR. CALVO: Because if these splices are associated with unrestricted windows, alarms or associated with lights, as opposed to control signals, that becomes very significant.

Depending on the system where that is

butt spliced, if it's a control system, then we are going to assess in those cases whether it's worth the while to have a butt splice or do something else, especially in there, because of the significant impact or the failure of that splice would have on the safety of the plant.

Suppose we found a butt splice associated with the diesel generators. If that one failed, we could end up losing all the diesel generators. Maybe we should look at those particular cases very closely.

If all the butt splices are associated with lights and alarms, then the importance to safety is not --

MR. JONES: They are not. No, they are not.

MR. CALVO: So I guess what I'm getting at, to put this whole butt splices in perspective, I would like to know as soon as you could, maybe at the front end of your plan, which circuits and which systems are those splices associated with and what impact those splices will have in the event of a seismic event or when you challenge them against all the design basis events.

MR. JONES: We have not identified the functions of the splices which we have considered to be

acceptable splices. We are only doing that where we have determined --

MR. CALVO: You may want to consider --

MR. JONES: We may want to consider --

MR. CALVO: You may want to consider that, and, also, depending on the role they play to the safety of the plant, you may say, "I want to handle this a special way, and I can handle this in a special way."

MR. JONES: Okay. We'll certainly consider that and be glad to talk with you more on that subject. Sure.

As I say, though, the safety significance to date that we have considered has only been for those where we feel that there's been a problem and not where they have been acceptable.

But we will certainly --

MR. CALVO: Even the ones that you feel are a hundred percent correct, you've got to put them in which system, what role they play in that system and what is the significance if that splice fails.

I guess it goes back again, when you say that it had to be properly qualified for the service conditions. Now, what do you have in mind there when you say "service conditions"? What did you consider?

I'm asking the question, what things do you consider when you say that you are going to be sure that they are going to be qualified for the service conditions?

MR. JONES: Primarily what we have considered in qualifying for service conditions has been atmosphere; that is, you know, on the accident conditions, the atmosphere for them. Not its function, but where it is as opposed to what it does, if you follow me.

MR. CALVO: But I guess what we had in mind when you try to qualify a piece of equipment, a splice, a cable, to a service condition, the service condition all the design basis events.

I guess one thing of interest will be what happens when you shake -- if a seismic event in some kind of way shakes those things up, if it will come loose as a result of that.

This is the kind of service conditions that we had in mind.

MR. JONES: I think that's covered under qualifications, but we'll be glad to go over that with you in detail. We do have the qualification reports.

MR. CALVO: Okay.

MR. JONES: We will be glad to get into further detail with you on that.

MR. BURWELL: My name is Spottswood Burwell of NRC. I wonder if copies of these slides will be made available.

MR. JONES: We are going to give them to her as part of the transcript, as I understand. I believe that's right.

Our next concern is with the -- and I think we need to spend just a little bit of time talking about it -- is the insufficient conductor penetration depth.

We can't tell that from looking at it. What caused the concern is the little splices are translucent, and if you look with a light behind them, you can see whether the insulation is seated all the way.

You can't tell whether the conductor is seated all the way, but you can see where the insulation is in all the way.

We have found some where there's a gap that shows that the insulation is not in all the way, which means one of two things: Either it was stripped too far back from the end of the cable or the whole thing wasn't pushed in far enough before it was crimped.

So we have identified some of those and we are going to do some testing. We are going to use particularly the ones that we have to remove.

To date we have identified about 77 that we know are going to have to come out. So we are going to use those particular ones to come out; we are going to run some tests on those.

We have identified some that have two hits. They had to be removed for some other reason, and, also, you can see that there's a little conductor gap. These will be destructive tests.

We've also done some X-raying. I think we are going to find that a satisfactory X-ray will show us whether we've got the penetration or not. I believe the guys that have done that said that it's even possible to do it on the ones that are in place in the control room.

So we are going to do further investigations. We are going to do some pull tests when we are evaluating safety significance, for example. One that has been pulled out for the wrong crimp tool, for example, we are going to run pull tests on those in accordance with the UL standards to see what might have happened if we hadn't discovered what was wrong.

So we've got a small testing program that

we're in the process of outlining now. I think it will resolve all these things and tell us exactly which ones have to be removed and exactly which ones can be kept and for what reason.

Let me summarize, not just from the standpoint of butt splices, but from the standpoint of our whole Program Plan that we've got here in the electrical area and in the other areas, to kind of reiterate to you how we got to where we are. I think the butt splices is a pretty good example of this.

The Program Plan that governs the actions that we work under, that is, that the SRT works under, is shown in this as sort of an evolution of what's happened to the butt splices.

First, there was recognition at the beginning, I think, that installation should be improved through retraining the electricians, through retraining the inspectors, and that we needed to separate the splices in accordance with the NRC's guidelines.

We agreed that the splices need to be qualified for the environment used in. We recognized that the procedures need to be tightened up, both in installation and for the testing procedures.

Stage two, as I look at it, was recognition

that the documentation that you guys looked at didn't meet the witnessing requirements. That was just a small sample, but we recognized that they didn't.

As a result of that, we went into a third party reinspection of all these butt splices that we've identified in control panels, where these splices were made in these control panels. We reinspected them all.

And we also recognized in the second phase that the design drawings need to be made to match correctly the as-built condition.

Then we went to stage three, which was recognition -- that's where we are now -- that the installation requirements had not been met in all cases, and that there will need to be corrections of immediate concerns.

That is, under the requirements of the TUGCO program, we had to correct those immediate concerns.

We had to evaluate the safety significance of what we found, and we have to determine the need to expand what we found here into other areas.

As part of that, also, we need to define what the long-term corrective action is.

So this has been the three stages that

we have come through in this thing. Throughout this whole process, what we've also recognized in addition is the need to coordinate what we've found with the other QA/QC concerns that have come out in subsequent letters, and to maintain communication with our other SRT disciplines, that is, civil, mechanical, whatever, testing, so that they have access to the things that we've found so that where it is applicable that they can apply those lessons that we've learned to the areas where they are working.

If there's commonality of the problems, we want to know about it throughout, no matter what discipline it is. It makes no difference to us.

We want to make sure that where we have found that there is some commonality of problems, that everybody understands them.

But I think that what we've done in this is indicative of the breadth and the depth to which we have gone in these action plans.

This is from the standpoint of finding things that are wrong, kind of a bad example, but I do think it gives you a better understanding of the way that we are approaching these problems. That is that we are not simply addressing your immediate concerns you found with the TRT and putting that away

or fixing that immediate thing. But we want to get to the root of it. We want to correct all of it. We want to make it better.

We want to make sure that the work that goes on in the future in related areas is done adequately, and that where else this might apply throughout the plant it is also applied.

I think that this particular area has been a good example.

That concludes all I had on the butt splices. We can go on to terminations.

MR. CALVO: I would like one more question.

MR. JONES: Sure.

MR. CALVO: Are you going to consider the verification of circuit operabilfty?

MR. JONES: We've looked into that, both from the standpoint of -- I think the procedure is now requiring conductivity checks, that is, conductivity checks before put into service.

The operations also require -- they determinate and run their own conductivity checks, in addition to the function of the tests that they subsequently run on those circuits after they are reconnected as part of the start-up testing program.

MR. MARINOS: Do you mean continuity tests?

MR. JONES: Continuity tests, right.

MR. CALVO: I guess I'll just reiterate what I said before. We'll be very interested, everybody, in the front end of it, what circuits these butt splices are associated with.

MR. JONES: Okay. We have not to date looked at what the functions are for all 600 of those circuits, as I have mentioned.

We will be glad to get into that and have some further discussions with you about it. We have not done that to date.

I.A.4., the title is called, "Agreement Between Drawings and Field Terminations," and this is selected field terminations, cable terminations were looked at by the TRT and it was found in several of the cases that there was not agreement between the location of the terminals in the field and what was shown on the drawings.

Our initiative in this area has been to conduct a statistically based random sample of the safety-related terminations in the control and cable spreading room, and we have provisions there, if necessary, to expand that sample based on the results.

To get back to what you said, Mr. Calvo, a little earlier about limited to the safety related and

critical uses, this sample that was selected was comprised of a population of -- I believe it was 3,000, a little over 3,000 terminations which we had determined were associated with circuits interfaced with the alternate shutdown panel.

That is, these were critical circuits to being able to shut the plant down in accident conditions and to prevent the core damage that I think you had previously considered.

So that's where this population in this particular case was selected from. The number -- I'm sorry, I don't have it right now, but I think slightly over 3,000.

In this case we didn't feel like five percent was adequate. In this case, statistically based, 95 percent confidence that they are less than one percent, that there will be less than one percent errors in the entire population, based on the sample that we found.

This required -- okay, I'm sorry. Here's the numbers. Thirty-eight hundred and twelve, three thousand eight hundred and twelve was the number.

To get the one percent required that we inspect three hundred with zero rejects, zero exceptance. So this was the numbers that were used.

MR. MARINOS: What are the expectations to locate termination problems during a pre-operational test? Would they expect, if you didn't look at them all, that there are some wrong terminations?

Is the pre-operational test comprehensive enough to locate those?

MR. JONES: I would say, and this is purely opinion, Angelo, that where they are critical, there's a very good expectation that they would.

MR. TYLER: Terry Tyler, the Comanche Peak Response Team.

The pre-operational test program, the prerequisite testing did verify the terminations, circuit continuity, et cetera; and also, the logic tests have been reperformed to verify total logic circuitry functionality, both initially and then again the second go-round of testing.

So to answer your question, yes, the pre-op tests are very comprehensive and would pick up those problems.

MR. JONES: So to date, what we have found, we have compared these 300 terminations to the drawings.

We have also, in doing this, looked also at the crimps, the other inspection attributes, the

connections to the terminal blocks, whatever else you can tell in an after-the-fact inspection. That is, that they were identified properly, the right colors, all that kind of thing.

We did find some minor problems, such as there was some difficulty in identifying a blue conductor because of the shade of what was used.

They identified one terminal that looked as if the conductor was not inserted far enough into the sleeve. However, an NCR had previously been written on that and it had been covered.

There were a couple of drawing errors. There were some spares that weren't shown on the drawings, for example, and weren't tagged.

But in all cases, in all cases, as Terry mentioned, the function of all these terminations was correct.

In addition to that, we added the 600-plus that we did under the butt-splice inspection into this pot, and they are distributed not just to the interface with the alternate shutdown panel, but for whatever they happened to be used for.

We also, in conjunction, when we looked at the butt splices, we looked at the terminations associated with those butt splices, which tripled our

sample size, basically; and, again, although there were some minor concerns we found -- For example, in this case we found a rolled pair of leads, a black wire and a white wire were rolled. They went to a contact, which the function was correct.

We found a loose screw on one of the terminations, and, also, in doing it, where it first appeared that the termination did not match the drawing, in fact there was a design change in progress, that when it caught up to the end of the design change, it actually showed the terminations as they were in the field.

So all in all, we feel very good about terminations.

MR. CALVO: You say you selected the alternate shutdown system. The alternate shutdown system, before your inspection, was that alternate shutdown system checked out by the pre-operational people?

MR. JONES: Oh, yes. I would say probably, and I don't have any numbers or anything to base this on, but most of these terminations, I would guess, had all been checked two or three times, one way or the other, before we got around to looking at them.

I would suspect that after you looked at them, that there had been a number of them reinspected, for whatever reason, subsequent to the time you looked at them until the time we got around to looking at them, for whatever reason that there might have been.

MR. CALVO: So far as that system is concerned, nobody is going to touch that system any more? It's finished.

MR. JONES: Operations has to do that under their maintenance procedures.

MR. CALVO: Okay, but as far as the construction aspects, that system has been done.

MR. JONES: That system has been done.

MR. CALVO: They are not going to be disturbed.

MR. VOGELSANG: We might have some rework on the butt splices on that system.

MR. JONES: Right. Let me say now, if there was a butt splice in that system, in accordance with the procedures that they use, it would have to be turned back to construction; is that right, Iven?

Redone by construction, turned back to them, and back through their whole testing system, the whole testing program again before it was found to be acceptable.

MR. CALVO: It will be done within a controlled manner.

MR. JONES: Yes, absolutely.

So we feel good about the terminations. There's no question about that.

1.A.5. was a disposition of some nonconformance reports on vendor-installed AMP -- again, the same vendor -- terminal lugs.

The issue that was found was that the NCR's which dispositioned bent vendor-installed AMP terminal lugs. That's kind of a mouthful, but the vendor has installed terminals within these items of equipment which had been bent or twisted.

The disposition -- The NCR's had either been improperly dispositioned or closed.

Initiatives that we've taken on that -- and I think the problem that was found was they had accepted the lugs that were bent more than 90 degrees or they were twisted, and the basis for that acceptance is what was in question.

To date, the NCR's have been redispositioned in accordance with the AMP guidelines. I have talked to the guy on the phone, other people have talked to him on the phone, but in addition to that, we've gotten your comments. I believe it was in your comments or

either.in the NCR, but I believe in your comments, was that you would like to see a formal written AMP analysis or test results or whatever that they needed to go ahead and verify that.

So in order to go ahead and take that to its conclusion, TUGCO has issued a purchase order to AMP to conduct specific tests on these specific lugs under these conditions that we're talking about here, and to give us a written report.

That will cover the problem, both the bending, whether to 90 or to 120, and the question of twisting which -- I guess the twisting was an unfortunate selection of words. It's not exactly a twist, but I would have to describe it as being bent upward and to the side at the same time, more than as if you went straight at it and twisted it. That's my understanding of the problem.

AMP has that. We are expecting something possibly at the end of next week from AMP on their actual physical tests on these lugs.

At that time, what we plan to do is to revise those NCR's to specifically include the results from AMP when we go back out there and look at those again.

MR. CALVO: I think the concern at the time

was the fact that in the NCR, there was not sufficient justification in there why that thing was accepted.

We are saying if there was a good reason for doing it this way, maybe the NCR should have addressed that good reason for it.

That was our findings at the time.

MR. JONES: Yes.

MR. CALVO: Let me go back again, if you don't mind, to the terminations again.

You know, you have looked at our Safety Evaluation Report.

MR. JONES: Yes.

MR. CALVO: And we cited some samples in here of things that we found wrong.

I think it would be appropriate, at least from the standpoint of the public record, for you to look at those things up there, whether you agree or disagree, so we have some kind of way to establish whether we were correct or something else has superseded this, that the thing has been corrected.

That would be very helpful to us, to put that in proper perspective for the future.

MR. JONES: We are doing that exact thing. I have to say we don't always agree with you.

MR. CALVO: That's all right.

MR. JONES: Okay. So that is the status of the AMP lugs.

That concludes the first part of my presentation on the 1.A.'s, that is, 1.A.1. through 1.A.5.

Do you have any questions on those? If you don't, I'd like to go next to the 1.B.1., 1.B.2., which are the flexible conduit to flexible conduit and flexible conduit to cable separation issues.

Sam Martinovich from Gibbs & Hill, who is the engineer who has been specifically doing the analysis on this, is here with us today.

I would like to ask if Sam would go ahead and give us his presentation on these two issues, if that's okay.

Let's take a five-minute recess before he starts.

(Recess taken.)

MR. JONES: We are about ready to start again, please. Okay.

The next two issues that I mentioned will be discussed together are the 1.B.1. and 1.B.2., which are the flexible conduit to flexible conduit and flexible conduit to cable separation.

As I mentioned before the break, the lead

engineer from Gibbs & Hill is Sam Martinovich, who has primarily been doing the work for us on this, and I'm going to ask Sam if he will address those issues for us.

MR. MARTINOVICH: Yes. As Martin mentioned, we are addressing two issues that were established during the TRT audit last year.

Some background, during the TRT review, the NRC in reviewing the internal wiring separations inside the control boards, they found that flexible conduit was used in some cases as a barrier where six inches could not be maintained between redundant safety-related or safety and non-safety-related wiring.

They questioned the use of this flexible conduit and that gave rise to basically the issue that no analysis was performed to allow the use of flexible conduit as a barrier in control room panels, and that where used, some flexible conduits containing these redundant train cables were separated by less than one inch or were actually touching.

That is the essence of the first issue.

The background to the use of the flexible conduit is that it came about because of the needs found during construction on certain devices on the control board, namely hand switches, which required

cable slack in installation for removal, serviceability, maintenance, adjustments; and because of that slack, removal tended to change existing separation and increase the likelihood of them possibly coming into contact.

Discussions with the control board manufacturer of the problem resulted in him recommending a cervic-air flexible conduit as a fix to be used as a barrier where the separation could not be maintained.

After also investigating with the flexible conduit manufacturer the seismic qualifications of the material and the environmental qualifications of the material, at that point the design change was implemented to use the flexible conduit.

The next issue, cables in control panels which were in direct contact with the conduits containing redundant train cables really represents a construction deficiency.

This was not a design basis to have cables installed in that manner, and that is not being analyzed. That is being corrected as part of post-inspection verification.

In response to the issues, if we can go to the next slide, the initiatives taken were to provide

analysis which would support the use of the flexible conduit as a barrier.

The scope of this analysis will address the suitability of the flexible conduit to be used as a barrier. It will consider specifically types of circuits in the control board, low level control instrumentation.

It will consider cable failure modes, with emphasis on cable construction and potential for electrical ignition and propagation of fire.

It will look at the available energy, maximum short-circuit levels on these circuits.

It will address the over-current short-circuit protection provided in the plant design.

And lastly, it will also take into consideration the location of the panels in a controlled environment, the control room.

Supplementing -- or as a result of the analysis, we will have prepared an inspection criteria for an independent third-party reinspection of the panels.

This reinspection criteria reinforces and is required to make sure that the objectives of the analysis are carried out, that the design basis is carried out in the installation.

This is a 100 percent reinspection of all the panels. I guess I've really gone into the third-party reinspection.

MR. CALVO: If you are going to perform some analysis to demonstrate the adequacy of the flexible conduit as a barrier, the prior slide is still saying that you are going to fix those cases where flexible conduit is touching each other.

So you say you are going to justify through analysis that flexible conduit can be used as a barrier, but you are still going to maintain the one-inch separation between flexible conduits from redundant divisions?

MR. MARTINOVICH: Let me clarify that.

The analysis is designed to establish in which cases touching, for instance, would be permissible, as opposed to cases where it may not be permissible.

The point I made about the construction deficiency has to do with exposed cables external from the flexible conduit which are in contact with the flex of a different train.

MR. CALVO: Okay. So then you are saying under those conditions, also, you may prove your case that --

MR. MARTINOVICH: May prove it's acceptable, but it's not a design basis.

MR. MARTINOS: And the analysis would include what kind of criteria for acceptability.

MR. MARTINOVICH: That's right. The analysis contains the acceptance criteria.

MR. MARTINOS: What are the acceptance criteria? Do you know it now? What are you going to try to do?

MR. MARTINOVICH: Well, we've tried to define --

MR. MARTINOS: Like you say, short circuit is one analysis to see what kind of currents are going to go through and whether you are going to start a fire.

Is that one of the criterion you are going to use?

MR. MARTINOVICH: That's correct, in addition to identify insulation systems which are not combustible, in which case the potential for fire propagation does not exist.

MR. CALVO: How are you going to convey that message to the craft personnel or the people who are going to do the next?

It's okay for the ones that you already

have built, but how are you going to convey that message for future work that you are going to do?

In this case you are going to do it this way, and in the other case you are going to do it this way? Do you intend to do it that way?

MR. MARTINOVICH: We intend to incorporate all the details provided in the inspection criteria on construction drawings. All of the necessary clarifications which may not have existed prior, okay, we will now be sure that the subtleties are on the drawings.

MR. MARTINOS: Well, in order for us to give you constructive comments with regard to your analysis, it will be given us as a plan and we can make a comment on the plan.

When you talk analysis, if we don't know more specifically what the analysis will include in terms of criteria --

MR. CALVO: We know the analysis will include -- it will be in accordance with IEEE 384; it will require that testing must be performed.

MR. MARTINOS: Well, that's one thing he did not specify.

MR. MARTINOVICH: Yeah, I'm coming to that.

MR. MARTINOS: Okay.

MR. MARTINOVICH: Any questions on that?

MR. MARTINOS: Go ahead.

MR. MARTINOVICH: Okay. That brings us to the summary of results.

As I mentioned, the analysis has established what separation is required for various types of circuits utilizing flexible conduit, where the flexible conduit is a suitable barrier; and it also specifically identifies where it may not be acceptable to use as a barrier.

That criteria has been incorporated in a written inspection criteria from which the reinspection procedures have been written.

The reinspection is currently in progress. Approximately 50 percent of the panels involved have already been inspected.

Now, in answer to your question, a physical test is in the works, and the objectives of this test will be to address the heat transit characteristics of the cable and conduit assembly, to address the integrity of the conduit under short-circuit conditions, which we feel are the major hazards from adjacent trains.

All of these activities currently are well underway. The third-party independent review is underway. The analysis itself.

As I mentioned, the inspection is 50 percen complete and the test procedures are being developed, and we hope to have the whole thing wrapped up in the next few weeks.

MR. CALVO: Okay. What is confusing me is that you are going to perform this test. Let's say that you demonstrate the acceptability of the flexible conduit as a barrier.

You still may recommend that in some cases conduits can touch or conduits cannot touch?

MR. MARTINOVICH: That's absolutely correct. We have incorporated in the inspection criteria what I feel is a very -- more stringent criteria than is probably required.

MR. CALVO: Also, my impression is that it's going to be a very complex criteria. You inform the craft personnel working in this panel here, in this case you can have those conduits touching each other, but in the other panel next to each other, in here for whatever other reason we had, now there they cannot touch each other.

So it looks to me like continuous attention will be given when you start these things up for somebody who understands what needs to be done and what is different.

You gave a criteria that was simple and straightforward, one-inch separation between acceptable cables inside conduit.

Now you are saying in this case it's okay and in the next case it's not okay. When we talked to some of the craft personnel who were here, they had trouble trying to understand that one. Now, on top of that one, you put in some variations to that one.

I still don't see how can you -- where you determine flexible conduit is acceptable as a barrier, what prompts you in some cases to have one option and in other cases to have another option?

MR. MARTINOVICH: Well, we have tried to minimize these options. The cases in which -- Don't misunderstand.

The cases in which we are saying that it may not be acceptable represent a relatively small number of cases.

MR. MARTINOS: Are you dealing only with already-installed systems, or are you going to be -- I guess this is where this confusion is.

What criteria are you going to be using for later, for future installations? Are you merely dealing now with what's there to find justification or do whatever modification is required based on some

criteria you have developed? Is that what it is?

MR. CALVO: Well, not only for the present, I'm saying maybe also for the future.

MR. MARTINOS: Well, that's what I was -- But I think he's dealing now with what he's got. He wants to make an assessment of the adequacy of what you've got now; is that correct?

MR. MARTINOVICH: Well, that had to be done. That was the first issue which had to be addressed; and, of course, that has been done.

Consideration also has been given to the future in terms of -- again, I go back to the inspection criteria.

This was critically reviewed from that perspective, that it should not be something so complex that it could not be carried out or understood.

MR. CALVO: Why can't you consider while you are doing this test, doing a test for the worst-case condition, worst-case condition where the conduits are touching each other.

If you prove the point with that test, you have no options. Then you say either touch or don't touch; it doesn't make any difference, because the tests have shown that.

Then the question is, if you have not

proved your point, then it is something that you worry about.

So I am wondering whether they are touching or whether they are within one-quarter of an inch or one-eighth of an inch, from the standpoint of independen party review whether that is acceptable or not.

You see what worries us?

MR. MARINOS: Minimize your options. Just look at the worst-case and if that's acceptable, you can apply this across the board.

MR. CALVO: You are saying to me that you are going to come up with a test and this test may not be exhaustive enough to prove the worst-case condition, and that's when the conduit is touching each other.

I'm looking at it from an independent party looking at that. Unless you tell me while you are in there that you are coming up with an option; are you coming to that?

MR. MARTINOVICH: Well, that is a consideration. It is something that we would like the test to also conclude, and that is certainly something we will try to establish, is a worst-case condition.

All I was saying is that it was not our intent to use this test as a vehicle for requiring

essentially no separation in the control board.

It is our feeling that separation should always be maximized unless it's absolutely impossible; and in keeping with that philosophy, we do not plan -- at least I don't believe we intend to use the test as this type of vehicle, just to change criteria.

MR. MARTINOS: To change criteria.

MR. CALVO: But again, you are going to --

MR. MARTINOVICH: But again, you may well conclude --

MR. CALVO: -- justify those where you are n meeting the criteria, based on that test.

MR. MARTINOVICH: That may well happen, that those on which we require more separation may turn out that they don't require that separation.

I don't know that we will relax that requirement. That's something that we have to consider.

MR. JONES: We will certainly give it every consideration. I agree with what you are saying.

MR. MARTINOVICH: It is from a philosophical point of view, you know, if we can do something, we try to do it.

MR. CALVO: But I feel we are beyond the

philosophical point of view at this time. We are trying to come up with a design that is adequate and can be implemented in a more simple way.

The reason you are where you are today is because of the requirement, the people could not understand why you could do things this way or the other way.

As a result of that, you violated the criteria without having an acceptable barrier, just flexible conduit.

It appears to me that without knowing more about your plan, that maybe you are leading to another set of criteria on top of the complex one that you have now that is going to make things difficult to control.

That's all my fear is on.

MR. JONES: Well, we will certainly, in doing these, give that every consideration; and certainly, if there is any way that we feel that based on the test or based on the analysis that we can simplify the separation criteria, the drawings, details, or whatever, of the criteria that there are, I think certainly that will be one of the goals that we will be looking toward doing.

MR. MARTINOVICH: One point I haven't

mentioned is that we have also worked closely with the people who are doing inspection in going over the procedure with them in short training sessions, to make sure that they are -- question-and-answer type sessions to make sure there is a clear understanding and to get this type of feedback from them where they feel something is too cumbersome or complex to implement.

This has also been done.

MR. CALVO: Okay. The other thing, again like before, we would be very interested to know in those cases where the separation is not being met, we also would like, if you could consider, identify those systems to see which systems they involve, so we can assess together the importance of that system to the plant safety.

MR. JONES: You mean as they are going through the inspection?

MR. CALVO: Well, you've got some conduits today that you say if you made the installation that is one inch -- if you prove that the flexible conduit is acceptable as a barrier, and then you go back and in most all the cases the flexible conduit from redundant trains are separated by one inch, we are not going to worry about those.

The ones that are touching each other, under these options that you have, we'd like to know which ones are those so we can assess the importance to safety of those systems.

When we are deviating from established criteria, we like to know, even though you have proved your case, we like to know what systems they are.

Are those cables associated within the control, and if control, what system was that? Was that a very important system or was it a secondary system.

MR. MARTINOVICH: The analysis actually will document each and every case, specifically each and every case in which touching of conduits is permissible.

MR. CALVO: Okay.

MR. MARTINOVICH: So it will not be --

MR. MARTINOS: The circuit will be made, also, then?

MR. MARTINOVICH: That's correct. That has been done.

MR. CALVO: So in the identification, maybe you should also consider the assessment, your assessment of the importance of that circuit to the system and that system to the plant safety.

MR. JONES: That has not been done to date.

MR. MARTINOVICH: No.

MR. MARTINOS: When you say you are going to identify the circuit, you say it's at the decay heat removal control system? You will be saying that?

MR. MARTINOVICH: I'm sorry, it's what?

MR. MARTINOS: A decay heat removal, RHR system or whatever.

MR. MARTINOVICH: Yes -- That information would not readily be available.

MR. MARTINOS: How would you identify it then on the circuitboard?

MR. MARTINOVICH: They are identified by the associated channel numbers assigned, which are traceable to a system.

I mean, it could readily be found out. It's just not as presently structured, you wouldn't know unless you --

MR. MARTINOS: When you say "channel," you mean Train A or Train B or --

MR. MARTINOVICH: No, no. A tag number and the cable number.

MR. MARTINOS: That would not mean anything to us.

MR. MARTINOVICH: I know.

MR. MARTINOS: That would not be useful for us to make an evaluation independent from you.

MR. CALVO: We are expecting for you to consider performing an evaluation and indicate the importance on that particular case with respect to the safety of the plant.

Again, this goes back again, your general plan says that you are going to come up with the safety significance of the findings. We'd like to know either you correct the deficiencies or when you are justifying the deficiencies, you've got to indicate the impact on the safety of the plant and, I guess, maybe one way to do it among many ways, associate that particular deficiency to the system and then what the role of that system plays on the safety of the plant, and then your assessment of the importance of that.

That's something when we are reviewing your plan, that's something we'll be asking for.

MR. MARTINOS: If it's a support system circuit, it would have a certain impact. If it's a direct safety system for an actuation of a protective action, then it would have a different impact.

That goes for the splices, too; that was pointed out to you earlier.

MR. JONES: We to date have not done that, nor had we planned to do that from that standpoint. We will consider that and talk with you further on that subject on both of them.

MR. MARTINOS: It should not be a very great effort to identify from the wiring diagrams, somehow you should be able to tell --

MR. MARTINOVICH: No, it's not difficult at all.

MR. MARTINOS: -- what that circuit does, and identify it.

MR. JONES: Like I say, we have not done that yet.

MR. MARTINOVICH: We just haven't provided that kind of records.

Now, on 1.B.3., this issue, "Conduit to Cable Tray Separation," originated as a result of, again, during the TRT NRC review of a Gibbs & Hill drawing that was made to provide separation criteria for plant construction.

The drawing -- And the design basis on the project is -- the guidelines are IEEE 387,, 1974, and Reg. Guide 1.75, Rev. 1.

NRC did note on the drawing, however, that it contained details of separation between conduits to

conduits, conduits to open trays, which are not explicitly shown in the IEEE Standard or Reg. Guide.

We advised NRC that these were based somewhat on a visual presentation of the wording of the standard as interpreted by us that an analysis had been made in various instances where a cable tray/conduit separation was not clear, or there was a potential for some misreading of the standard.

NRC's position was that this separation analysis had not been evaluated by them.

The action was to retrieve this analysis, as the slide indicates, update it -- not really update it; it was modified for presentation for a third-party reviewer who is currently reviewing this analysis.

Once we resolve any -- if there are any comments and necessary design reviews, this will be made available to NRC for their formal review.

Some of the examples -- The drawings address items such as non-clasp on the conduit to an adjacent safety-related tray.

MR. CALVO: If I remember correctly, you had conduits over open cable trays, and you indicated that there was one inch between them, and you indicated that you had performed an analysis that indicated it was not part of the actual 384. 384 would allow it to

do that, you indicated, and it was a difference of opinion on that.

MR. MARTINOVICH: The wording in the standard identifies "reduced separation is permissible when you have an acceptable barrier," and I think it's generally agreed upon that rigid conduit is a suitable barrier.

But the issue here was an open tray and the conduit, and the interpretation made was that if the conduit enclosed a non-safety circuit, the intent of the standard was not to protect the non-safety circuit.

So that conduit acted as a barrier for anything away from it, outside of it, and the detail itself was not shown in the standard, but we feel that --

MR. CALVO: But the intent was there.

MR. MARTINOVICH: The intent was there.

MR. CALVO: And I guess you, within the context of the standard, you are allowed to do that unless you can prove by analysis the fact that no single event can result in compromising the safety.

MR. MARTINOVICH: That's right. The analysi really just discusses the event and provides the logic used for permitting that type of design.

MR. CALVO: But as you know, in all the analysis required to justify the adequacy of installation, testing must be included.

In the analysis you are proposing, some testing was done; do you show that?

MR. MARTINOVICH: The analysis was substantiated for all the details in which the cable tray and conduit were involved.

The various separation distances were supported by tests conducted by Sandia.

MR. CALVO: All right. So your independent party who is going to look at this is going to correlate with the Sandia test that was done and will relate these back to the installation in Comanche Peak and establish that it's applicable.

MR. MARTINOVICH: I hope.

MR. CALVO: What I'm saying, I am hoping that that's the responsibility --

MR. JONES: That is the intent, yes.

MR. CALVO: Okay.

MR. MARTINOVICH: That's all I have to say on that unless there's any other questions.

MR. JONES: Thank you, Sam.

The last item is 1.B.4., and that was concerned with -- There were two minor violations

of the control panel separation criteria that were found during the TRT. These were actual physical violations that were found.

One of them was a field wire cable, the separation between that cable and a switch module; and the fact that a rigid barrier, one of the boards that was bolted into the board had been removed, and I believe it was lying at the bottom of the board or close thereby when you found it.

The status of this is that the NCR's, nonconformance reports were written and dispositioned to correct that particular problem.

In concurrence with this inspection, and I think it was in some of the comments that you gave to us as well, the inspections being done under Sam's 1.B.1. and 1.B.2. for the conduit separations, we are also looking as part of that at whether other barriers have been moved or there are other things of this nature that are found.

So this will give us a much -- throughout the boards, 100 percent throughout the boards to find areas where this similar-type thing may have occurred as well so we can correct that.

In addition to that, and into looking into the circumstances around that, it was, at least to me,

indeterminate as to who had done what. I mean, the barrier was removed, but there was no way to tell who had done it or for what reasons.

It could have been any number; construction could have done it as part of their installation.

It's possible that operations needed to remove it to calibrate an instrument, for example, or for some other reason. But it's pretty much indeterminat as to who has done what specifically.

But I don't think that's the important part. I think the important thing is that what we wanted to do is make sure that that doesn't happen again, either from a construction standpoint, if they have to make a modification, or from the operations standpoint, if they have to for any reason remove a barrier or violate any separation criteria that's set forth in the standards, that when they are through with that work, that they have to restore those separations to the criteria that's been established.

So in doing that, we've been discussing this with the operations people. As far as their maintenance procedures go, they are going to revise those procedures so that they recognize the separation criteria just in the same manner that construction people have to recognize the separation criteria.

They are in the process of doing that now. We will be reviewing that.

In going toward this, we are beginning to write up a final report on this and we hope it will be out of the way fairly soon on that particular item.

(Whereupon, the written handouts relating to the slides shown follow.)

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I.A.1 HEAT SHRINKABLE CABLE INSULATION SLEEVES

I.A.2 INSPECTION REPORTS ON BUTT SPLICES

I.A.3 BUTT SPLICE QUALIFICATION

I.A.4 AGREEMENT BETWEEN DRAWINGS AND FIELD TERMINATIONS

I.A.5 NCR's ON VENDOR INSTALLED AMP TERMINAL LUGS

I.B.1 FLEXIBLE CONDUIT TO FLEXIBLE CONDUIT SEPARATION

I.B.2 FLEXIBLE CONDUIT TO CABLE SEPARATION

I.B.3 CONDUIT TO CABLE TRAY SEPARATION

I.B.4 BARRIER REMOVAL

ITEM I.A.1 - NUCLEAR HEAT - SHRINKABLE CABLE INSULATION SLEEVES

ISSUE: QC INSPECTORS LACK OF AWARENESS TO WITNESS NUCLEAR HEAT SHRINK INSTALLATION

INITIATIVE:
- CONDUCT RANDOM SAMPLE OF HEAT SHRINK INSPECTION DOCUMENTS TO VERIFY WITNESSING AND PROPER DOCUMENTATION OF INSTALLATION.
- EXPAND SAMPLE PROGRAM TO PHYSICAL REINSPECTION IF APPROPRIATE

STATUS:
- PHASE 1 60 RECORDS THIRD PARTY REVIEWED - 1 REJECT
- PHASE 2 35 ADDITIONAL RECORDS BEING THIRD PARTY REVIEWED - NO UNDOCUMENTED SPLICES

TRT CONCERNS WITH
BUTT SPLICES

1. THAT INSPECTION REPORTS DID NOT INDICATE THAT THE REQUIRED WITNESSING OF SPLICE INSTALLATION WAS DONE.

2. THAT DRAWINGS DID NOT REFLECT THE LOCATION OF ALL BUTT SPLICES.

3. THAT THE BUTT SPLICES WERE NOT QUALIFIED FOR THE SERVICE CONDITIONS.

4. THAT BUTT SPLICES WERE NOT STAGGERED SO AS TO NOT TOUCH EACH OTHER.

5. THAT THERE WAS A LACK OF PROVISIONS IN THE INSTALLATION PROCEDURES TO VERIFY THE OPERABILITY OF THE SPLICED CIRCUITS.

Scotch

584 Transparency Mounting Frame

Commercial Tape Divisi

BUTT SPLICES IN CONTROL PANELS
INITIATIVES

PHASE 1

- RETRAIN CABLES TO PREVENT SPLICES FROM TOUCHING ONE ANOTHER
- REVISE PROCEDURES FOR TIGHTER CONTROL
- QUALIFY BUTT-SPLICE SLEEVES FOR SERVICE CONDITIONS
- REVIEW ADDITIONAL INSPECTION REPORTS FOR SPLICE WITNESSING

PHASE 2

- THIRD PARTY INSPECTION OF BUTT SPLICES IN PANELS
- UPDATE AND CORRECT DESIGN DOCUMENTS
- CORRECT HARDWARE DEFICIENCIES
- THIRD PARTY REVIEW OF ALL INSPECTION REPORTS

BUTT SPLICES IN CONTROL PANELS

STATUS

- PHASE 2 INSPECTIONS COMPLETE IN CONTROL AND CABLE SPREADING ROOMS
- CORRECTION OF HARDWARE DEFICIENCIES BEGUN
- DOCUMENTATION REVIEW BEGUN
- OTHER BUTT SPLICES HAVE BEEN IDENTIFIED FOR INSPECTION

BUTT SPLICES IN CONTROL PANELS
INITIATIVES

PHASE 3

- EVALUATE SAFETY SIGNIFICANCE
- DETERMINE NEED TO INVESTIGATE RELATED AREAS
- DETERMINE ROOT CAUSE AND QA/QC IMPLICATIONS
- TAKE LONG TERM CORRECTIVE ACTION

CONCERN MATRIX

CONCERN	CORRECTIVE ACTION	
WRONG CRIMP TOOL USED	REPLACE	REVISE PROCEDURES RETRAIN ELECTRICIANS
WIRE STRANDS CURLED	REPLACE	REVISE PROCEDURES RETRAIN ELECTRICIANS
INSULATION SPLIT OR IMPROPER HEAT SHRINK	REPLACE	SAME AS ABOVE
UNSATISFACTORY TERMINATIONS	CORRECT	ISOLATED - NO LONG TERM ACTION REQUIRED
INSPECTIONS INADEQUATE	CHECK TRAINING AND CERTIFICATIONS	REVISE PROCEDURES RETRAIN INSPECTORS
INSUFFICIENT CONDUCTOR PENETRATION	CONDUCT TESTS ON REMOVED CONDUCTORS	REINSPECT AND/OR REPLACE
ALL CONCERNS	DETERMINE SAFETY SIGNIFICANCE THROUGH TESTS AND/OR REVIEW OF FUNCTION	ESTABLISH ROOT CAUSES AND LINK TO QA/QC CONCERNS

I.A.4 AGREEMENT BETWEEN DRAWINGS AND FIELD TERMINATIONS

ISSUE: SELECTED CABLE TERMINATIONS WERE FOUND NOT TO AGREE WITH DESIGN DRAWINGS

INITIATIVE:
- CONDUCT STATISTICALLY BASED RANDOM SAMPLE OF SAFETY-RELATED TERMINATIONS IN CONTROL ROOM AND CABLE SPREADING ROOM
- EXPAND SAMPLE IF NECESSARY BASED ON RESULTS

STATUS:
- INSPECTION OF 300 TERMINATIONS COMPLETE
- NO TERMINATION OF ERRORS DISCOVERED
- 1 DRAFTING ERROR DISCOVERED - NO SAFETY SIGNIFICANCE
- BUTT-SPLICE PHYSICAL INSPECTION ALSO INCLUDED TERMINATION INSPECTION
  - 572 TERMINATIONS INSPECTED
    1 PAIR ROLLED LEADS (NO FUNCTIONAL PROBLEM)
    1 LOOSE TERMINATION

I.A.5 DISPOSITION OF NCR's ON VENDOR INSTALLED AMP TERMINAL LUGS

ISSUE: NCR's DISPOSITIONING BENT VENDOR INSTALLED AMP TERMINAL LUGS WERE IMPROPERLY CLOSED.

INITIATIVES:
- NCR's REDISPOSITIONED IN ACCORDANCE WITH AMP GUIDANCE ON BENT TERMINAL LUGS.
- AMP PERFORMING ENGINEERING EVALUATION OF BENT LUGS

STATUS: ANTICIPATE RESULTS FROM AMP BY FEBRUARY 18

FLEXIBLE CONDUIT AND CABLE SEPARATION IN CONTROL ROOM PANELS

ISSUES

- NO ANALYSIS WAS PERFORMED TO ALLOW USE OF FLEXIBLE CONDUIT AS A BARRIER IN CONTROL ROOM PANELS.
- SOME FLEXIBLE CONDUITS CONTAINING REDUNDANT TRAIN CABLES WERE SEPARATED BY LESS THAN INCH OR WERE TOUCHING.
- CABLES IN CONTROL PANELS WERE IN DIRECT CONTACT WITH CONDUITS CONTAINING REDUNDANT TRAIN CABLES.

Subject no.

FLEXIBLE CONDUIT AND CABLE SEPARATION IN CONTROL ROOM PANELS

INITIATIVES

- PROVIDE ANALYSIS FOR THE USE OF FLEXIBLE CONDUIT
- PROVIDE INSPECTION CRITERIA FOR THIRD PARTY REINSPECTION OF PANELS
- THIRD PARTY REINSPECTION OF PANELS

FLEXIBLE CONDUIT AND CABLE
SEPARATION IN CONTROL ROOM PANELS

STATUS

- DRAFT ANALYSIS BEING REVIEWED BY THIRD PARTY CONSULTANT
- INSPECTION CRITERIA HAS BEEN PROVIDED AND REINSPECTION PROCEDURES WRITTEN
- PHYSICAL TEST OF CABLE AND FLEXIBLE CONDUIT UNDER CONSIDERATION

ITEM I.B.3 CONDUIT TO CABLE TRAY SEPARATION

ISSUE: EXISTING GIBBS AND HILL SEPARATIONS ANALYSIS HAD NOT BEEN EVALUATED BY NRC

INITIATIVE:
- GIBBS AND HILL RETRIEVED AND UPDATED SEPARATIONS ANALYSIS
- ANALYSIS BEING REVIEWED BY A THIRD PARTY FOR ADEQUACY
- ANALYSIS WILL BE SUBMITTED TO NRC ONCE THROUGH REVIEW CYCLE

STATUS: THIRD PARTY REVIEW COMPLETE AND COMMENTS BEING RECONCILED WITH GIBBS & HILL

ITEM I.B.4 BARRIER REMOVAL

ISSUE: TWO SEPARATIONS VIOLATIONS WERE DISCOVERED BY TRT

- CABLE TO SWITCH MODULE
- RIGID BARRIER REMOVED

INITIATIVES:
- NCR's ISSUED FOR EACH VIOLATION
- VIOLATIONS CORRECTED
- CORRECTION VERIFIED BY THIRD PARTY
- REVIEWING CONSTRUCTION AND OPERATIONS PROCEDURES TO MAKE SURE THESE PROBLEMS DON'T RECUR

STATUS: REVIEWING PROCEDURES AND WRITING REPORT

MR. JONES: That was the last of the items we had, and I would like to take just a minute, if I could, and summarize what we have done today.

I think this is a fairly good review of what we've done today, and particularly, I hope you have gotten from us what I've tried to get across to you, the approach we're taking to all these things.

It's not just fix that particular item that is of concern, but we are looking at it from a broader standpoint. We are not only interested in that item, but we are interested in what was the root cause of the problem and we are interested in implications in other areas, generic implications.

We are interested in seeing that what we have learned from here applies to future work that we are doing in Unit 2 or other work in Unit 1; and that we are willing to go to whatever lengths are needed to make sure that all these objectives are accomplished, so that not only you are satisfied when we are finished, but that we are satisfied when we are finished with it, too, and that is important to us.

We are making really, I think, good progress on this. We have problems with the butt splices.

I think I would say to you today that from

what we've seen of that problem that we've got now, we have fairly well circumscribed that problem.

But in the other areas we are making good progress. We expect that it's not going to be very much longer before we can put to rest all of them, and that in the end you will be satisfied as well as we will be satisfied.

Are there any other questions?

MR. CALVO: I guess it goes back to what I've been saying. It appears that the plan that you have, the presentation, that you are going in the right direction; but I still am looking at it from the standpoint of the significance of the findings with respect to the safety of the plant.

It looks like you are leaving those to the end and I sure would like to know what they are first and know the significance. Then knowing that and the risk to the plant, we can assess whether the plan that you are proposing is adequate.

I mean for those cases where we are justifying exceptions of a system practice, of a system regulations. You say, "Well, we didn't do it this way, but now we have something here that is as good as."

I would like to know, to determine whether the substitutions are adequate, I would like to know

the significance of the findings as they relate to the systems and the importance of the systems to the plant safety.

Depending on the importance, I can assess whether the plan is going in the right direction to take care of these things for these systems and these things for the other systems.

So I think you should consider that as maybe guiding what your plans should be, so it is something that it is your plan that you are preparing, trying to find out -- if it sounds okay, if it's consistent with what we have found out.

This is the only thing that I have found. You end up doing it, but I am just wondering if it should not be at the bottom, but maybe you should consider to put it more at the top, because I think you can put it in proper perspective, and it has not been put in proper perspective yet.

This is the only comment that I have.

MR. MARTINOS: I have no more comments.

MR. CALVO: Does anyone else?

MR. JONES: That concludes our presentation.

MR. CALVO: Before I close, I forgot about a couple of things.

Another electrical issue brought up by the electrical and instrumentation group was the one with the QC inspectors.

MR. JONES: Yes. There are other issues, too, that were brought up under the electrical. The cable tray supports or conduit supports, those are covered by other group leaders.

The QA/QC is another, training --

MR. CALVO: Yes. The QC inspector training and requalification. You said those are covered under the QA/QC --

MR. JONES: Under the QA/QC team leader, which is excluded from our particular part of this program.

MR. CALVO: There is also another item that is in the SER and maybe you can tell me how you are going to cover this one.

It was not in the September 18 letter. It has to do with the conduit supports and it was the use of the procedures by the craft personnel, where they were not using these procedures.

MR. JONES: Installation procedures?

MR. CALVO: That is right.

MR. JONES: Right. I noticed that when the SER came out as well, and we brought it up with some

of the support people in our group; but to the best of my knowledge, that's not been assigned to anyone specifically yet.

But we are aware that that's in there, that it is not in the original letter.

MR. CALVO: I can't think of any others. That was the only one, plus the QC electrical training.

MR. JONES: That's covered by John Hansell.

MR. CALVO: We will most probably have to come back at that time. I guess it's going to be a joint effort, maybe, between QA/QC and the electrical instrumentation group, because there was an SER.

That's all I have. We wanted to bring that to your attention.

Thank you very much for your presentation.

MR. JONES: Thank you.

MR. CALVO: Excuse me. I guess maybe the question should be directed to the audience, if they have anything to say, anything to add, any comments?

(No response.)

MR. CALVO: The record indicates there are no comments, so we'll close.

(Whereupon, at 10:45 a.m., the meeting was concluded.)

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CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: MEETING BETWEEN TEXAS UTILITIES AND THE NUCLEAR REGULATORY COMMISSION REGARDING COMANCHE PEAK STEAM ELECTRIC STATION - PIPING AND SUPPORT DESIGN

DOCKET NO.:

PLACE: GELN ROSE, TEXAS

DATE: THURSDAY, FEBRUARY 28, 1985

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

(sigt) _____

(TYPED)

MARY BAGBY/RJM
Official Reporter
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