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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INDEPENDENT ASSESSMENT PROGRAM -

COMANCHE PEAK STEAM ELECTRIC STATION

Nuclear Regulatory Commission
Air Rights III Building
Room 5033
4550 Montgomery Avenue
Bethesda, Maryland

Thursday, December 20, 1984

The meeting between CYGNA and NRC Staff commenced at 9:00 a.m., Vincent S. Noonan, NRC Director, Comanche Peak, presiding.

PRESENT:

SPOTTSWOOD B. BURWELL	NRC/NRR/DL/LB #1
DAVID TERAO	NRC
LARRY SHAO	NRC
VICOTR FERRARINI	TRT Member
B. F. SAFFELL, JR.	Battelle (NRC Consultant)
S. H. BUSH	Review & Synthesis
T. L. BRIDGES	E G & G Idaho
DAVID PINOTT	Orrick, Herrington & Sutcliffe
CRAIG KILLOUGH	CYGNA Energy Services
NANCY WILLIAMS	CYGNA Energy Services
MIKE SHULMAN	CYGNA Energy Services
JOHN MINICHIELLO	CYGNA Energy Services
GORDON BJORKMAN	CYGNA Energy Services
R. F. WARNICK	NRC, Region III
VINCENT S. NOONAN	NRC Director, Comanche Peak
CHET POSLUSNY	NRR Comanche Peak Technical Review Team
J. NELSON GRACE	I&E Comanche Peak Technical Review Team
E. L. JORDAN	I&E Comanche Peak Technical Review Team
R. H. WESSMAN	NRR, TRT
JIM GAGLIARDO	TRT
ANNETTE L. VIETTI	NRC/NRR/DL TRT
WILLIAM A. HORIN	Bishop, Liberman, Cook, Purcell & Reynolds
JOHN W. BECK	Texas Utilities
JOE SCINTO	NRC
DAVID H. WADE	Texas Utilities
R. C. TANG	NRC/NRR

-- continued --

P R O C E E D I N G S

MR. NOONAN: Good morning.

My name is Vince Noonan from the NRC Staff on the Comanche Peak project.

This morning we have the meeting between the CYGNA people and the NRC people to talk about the scope of work that is being done by CYGNA, and also there will probably be some questions on the technical aspects of the work being done also.

Dave Terao from my staff over here will be one of the primary speakers for the NRC, talking about the basic scope of work, and we also have some members of what we call our Contention 5 Panel present here this morning. This is a panel that has been established to look at the Contention 5 aspects of the Comanche Peak project.

I think with that I am basically going to turn the meeting over to Mike Shulman from CYGNA.

You can go ahead from there, Mike.

MR. SHULMAN: I'm Mike Shulman, general manager of CYGNA Energy Services.

I believe it is still true that we requested this meeting largely because it has become apparent to us in several phone conversations, starting with the conference call that occurred in late November, that there is some lack of total understanding of how we are addressing the

so-called Walsh/Doyle allegations in our Phase 3 and Phase 4 scopes of work, the independent design review for Comanche Peak.

What we would like to do here over the next few hours is first start off with a description of the scope of work that we have, what the objectives and purposes of the various phases are because they are different, and then, to the best of our knowledge, list the Walsh/Doyle allegations and then proceed to status those allegations with respect to the work we're doing. And Nancy Williams will be doing that pretty much.

With us we have Dr. Gordon Bjorkman and John Minichiello, who have been working with Nancy on the piping and pipe supporting issues with regard to Walsh/Doyle and the other issues outside of the Walsh/Doyle.

Dr. Spence Bush is here representing our senior review team, which is a review team that consists of Dr. Bush, Dr. Kennedy, and myself, and we have been meeting approximately once every month, month and a half, to review some of these issues and other issues.

And I think if anybody besides Nancy or myself speaks or would address questions, it would be one of those three people.

I guess the only other thing I would like to say is we have about 40 Viewgraphs, and I don't know what the

schedule for today is. We are going to try to move pretty rapidly, and I would suspect that we might see the need for follow-on discussion on technical issues beyond today.

MR. NOONAN: Okay.

We've got handouts. I would almost prefer to pass them out after the meeting so we all stay on the same issue but that is up to everybody's call.

(Slide.)

MS. WILLIAMS: Good morning. I am Nancy Williams.

We are here today, as Mike just explained, to address what CYGNA has done relative to the Walsh/Doyle allegations as part of our independent assessment program. We shall be referring to it as the IAP henceforth.

I am going to do this by first discussing what the scope and objectives were for each phase of the independent assessment program, and then I will try and cross-correlate that to the Walsh/Doyle allegations. I am not going to be addressing the allegations as I go through the scope. That will be the second part of the presentation.

Before I begin, I think there are two definitions that I want to get clear in everyone's mind, and if, when I get through explaining what they are, there are any

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questions, I would invite you to ask because I am going to be using this terminology throughout the presentation.

The first is "programmatic review." What CYGNA means by a "programmatic review" is a review of the procedures to ensure that there is a complete set of procedures to address all aspects of a design control program necessary to comply with the ANSI N45-211. This says nothing about whether they are implementing the program, whether they are following the procedures. It is simply a review to address whether a program is in place.

Now that is different than an implementation evaluation, which is where we take the procedures and assess, through example, whether they are being implemented properly on the project. We do this through technical reviews and we do this through design control checks. And it is different from the programmatic in the sense that we are checking whether they are following their program commitments as stated in the procedures.

Are there any questions about the differences of those two items? It is very important to the understanding of how we have laid this IAP out.

MR. NOONAN: Nancy, maybe I can just ask the question here.

We have talked to the Intervenor case, Mrs. Juanita Ellis, and one of the things that she has

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asked us to make sure that is brought out in the discussions -- now I'll mention it here at this point in time because I think you have basically touched on it -- she has asked us to-- I will try to quote it as much as I can.

The summary depositions for design QA are "Describe the design QA process by the Applicant." She wants to know is CYGNA looking at the design QA process or how that process is being implemented. And if so, she wants that kind of described in the discussions.

MS. WILLIAMS: Okay. I think I will cover that in the scope. Would you rather I wait then--

MR. NOONAN: Yes, just as you go through.

MS. WILLIAMS: Okay.

(Slide.)

Beginning with the first part of the presentation, I'll be walking right through the phases.

Phases 1 and 2 are combined because eventually, although they evolved through time, first as Phase 1 and then finally as Phase 2, they ended up in one final report which is our Report 83090-01. And that was issued in November of 1983.

The Phase 3 report was issued in I believe July of 1984.

And then finally Phase 4. We are still currently completing that review and no report has been

issued at this point in time.

I will then summarize the phases as they fit together so you can get a feel for the overall picture and then I will go in to discuss how the allegations relate to the scope.

(Slide.)

Some of these slides-- I apologize for some of the people in the room. They are going to be very repetitive, particularly when you get to the scope, but there are new people here today so we felt it necessary to perhaps repeat some of this.

The purpose of Phase 1 and 2 was to provide supplementary evidence, and that's a key word here because at the time of the development of that program, it was not generally felt that it was necessary to embark on a full-blown IDVP on the Comanche Peak project.

There were several discussions between the Staff and Texas Utilities, with some involvement on the part of CYGNA, where it was finally agreed to, the scope for Phases 1 and 2, and we began that effort some time in the late spring, early summer of 1983.

(Slide.)

With that purpose in mind, four objectives were set for the program. The first was to provide an assessment of the adequacy of the design control program. This is the

programmatic review. This is where we went in and assessed whether they had a complete ANSI N45-211 program in place.

We then set out to provide an assessment of the design adequacy of a selected system. This was a multi-discipline review. We verified a selected as-built configuration of a different system and then we evaluated the extent of implementation of selected design control program elements. And these elements I refer to are portions of ANSI N45-211, but we did not check for a full implementation across the board.

MR. GRACE: But if you get into the design adequacy of a selected system and verification of an as-built configuration, you are going to be on merely looking at a program that sits on the shelf.

MS. WILLIAMS: That's correct.

MR. GRACE: Implementation is implied.

MS. WILLIAMS: Those are implementation; that's right. You've got the difference down, I think.

The design reviews, the technical reviews are implementation evaluations as well as the design control implementation evaluations.

MR. NOONAN: Will you identify yourself for the Reporter?

MR. GRACE: Nelson Grace, I&E, NRC.

MR. SAFFELL: I am Bernie Saffell, Battelle

(Columbus). I would like to follow up.

You made a particular point in the beginning to say the review was strictly programmatic, and I just want to make sure I understood your answer. But you did then get into the verification -- or the implementation of the program?

MS. WILLIAMS: Yes. Two things we did. One was a programmatic review and then an implementation evaluation. We did both.

MR. SAFFELL: Oh, okay.

MS. WILLIAMS: So we did a programmatic review of Texas Utilities and Gibbs and Hill for their establishment of a program in compliance with the ANSI N45-211. But we also did implementation evaluations which would be the last three bullets on this slide. Those are all implementation evaluations.

MR. SAFFELL: Okay. Now did your implementation evaluation consist just of a case of going through a single system?

MS. WILLIAMS: Yes, and I will be covering that in the next slide. I will walk you through the system and how it relates to these objectives.

MR. SAFFELL: Will you address the single system versus more than one system, why -- what the basis -- you know, why you selected just one as opposed to more than

one?

MS. WILLIAMS: I will try and do that.

MR. SHAO: What do you mean by design adequacy in this case here?

MS. WILLIAMS: That's a technical review where we select a hardware scope, a system, and then we do a structural review, piping review using our engineers.

MR. SHAO: Suppose the original calculations said the stresses are 18 pounds psi. You do a review, you find the stresses may be 27 pounds psi, which is 50 percent higher but still below the allowable. Do you consider this is design adequacy, or how do you define design adequacy?

MS. WILLIAMS: We would consider that an error, which-- We would have to assess its importance and any implication of any further breakdowns that that error might represent.

MR. SHAO: As far as design adequacy is concerned, that's okay then even with the 50 percent?

MS. WILLIAMS: Not necessarily.

MR. SHAO: For this particular case it's okay?

MS. WILLIAMS: If you just had one isolated case, we might feel it was adequate, but you would have to look at that in relation to all your other findings to determine whether there is any breakdown in their program, or if they have any difficulty with certain technical

aspects of their design.

MR. TERAO: I would like to make one statement at this time.

I know there are a lot of new people in this room, and we've gone over Phases 1 and 2 in detail with the Staff in many meetings. I don't really believe it is appropriate to start asking detailed questions on Phases 1 and 2. The whole purpose of this meeting is to discuss Phase 3.

I believe what Nancy is doing at this time is giving us background for Phases 1 and 2, and I believe it is non-productive to go into the details of Phases 1 and 2.

MR. NOONAN: Dave, I think I have to let the Staff ask the questions, though, as they see fit.

MR. TERAO: Yes, I see that. But we're getting into many questions that were asked in previous meetings when the Staff did a detailed review of Phases 1 and 2.

MR. GRACE: And Phase 3 is Walsh/Doyle. Right?

MS. WILLIAMS: That's what I'm here to explain.

(Slide.)

Two systems were selected to implement the program which was set forth to fulfill the objectives in the previous slide. The first of which we have here is the RHR Train B. This is a schematic diagram which does not show the branch lines or in any way indicate the complexity of

the system, but is merely to represent the major components associated with the portion of the system that we reviewed for the technical reviews.

This is the system where we performed the electrical I&C pipe stress, pipe support, cable tray support evaluations.

Some highlights of the system is it consists of two stress analysis problems, approximately 31 pipe supports on the main flow path, and then we picked up the anchors on the branch lines.

The INC scope is shown over here where we check the control circuitry associated with the isolation valve, we check the power source on the electrical side from the safeguards bus to the RHR pump, we check the fluid head at the penetration MS-2, and we evaluate the cable tray supports associated with the power line which runs to the RHR pump. And then of course all the piping and pipe supports that I've just described are associated with the system.

MR. SHAO: Is that Class 1 piping or Class 2 piping?

MS. WILLIAMS: Class 2.

(Slide.)

For the purposes of conducting walk-downs, a different system was selected. Because at the time this was

the only system that had been turned over to startup, it was therefore considered to be more complete, so we selected Train A and walked down the main flow path, checking against the drawings to ensure that the as-built configuration matched the design drawings.

When I say that "we" selected it, I guess I should clarify that to some extent, that the selection of systems was really a joint discussion between the Staff and CYGNA and Texas Utilities and probably to a lesser degree, CYGNA.

(Slide.)

To summarize some things that I have pretty much covered in the last slides, using that hardware scope, this is a summary which will show you what was reviewed for each of the systems.

You can see we checked the design for the RHR safety injection system, and that we did the walk-downs in the spent fuel pool cooling system.

The other bullets you see here, design analysis control, internal/external interface control, and design change control, are the elements of ANSI N45-211 which we checked the implementation of.

So having evaluated the program, we selected these three to pursue as far as the implementation goes on the project.

For design analysis control we used the documentation associated with the technical reviews on the RHR system, and for the other two we use the documentation associated with the spent fuel pool cooling system.

(Slide.)

And then we did the programmatic reviews of Texas Utilities and Gibbs and Hill because Gibbs and Hill is the A-E.

That sums up Phases 1 and 2 in terms of the scope. Now we enter into Phase 3.

Phase 3 was born out of Texas Utilities' plan which was submitted to the Board in response to the Board's memorandum and order of December 28th, 1984 --

MR. SHULMAN: '83.

MR. BUSH: '83, I hope.

MR. NOONAN: '83. Excuse me.

And as part of that plan, CYGNA was requested to submit an extension of the IAP program which we have so designated as Phase 3. We submitted this plan to Texas Utilities on March 13th, 1984.

And the purpose of the program is shown here, which is to perform an independent review of a system which was selected by Texas Utilities on the basis that it exhibited the characteristics associated with the Walsh/Doyle allegations.

As far as our methodology goes, we were still reviewing the system and we would be encountering configurations associated with the allegations.

We did not set out with a list of allegations and pursue them plant-wide. At this point in time or I should say at the closure of Phases 1 and 2 or the issuance of the report, we were not familiar with the allegations. It wasn't until the February hearings, February 1984, that we were first introduced to the allegations, and some of the history behind the formulation of those allegations.

So based on the documentation that we were supplied by Texas Utilities, the selection of the system, we set out to perform an independent review.

You will see when I get into the listing of the allegations that there are certain documents that we relied on for the development of this list of allegations, and there are other documents which you are familiar with that we did not review, and I will go through what those are.

MR. NOONAN: Nancy, did you ever discuss this Phase 3 with the Hearing Board directly, the ASLB Hearing Board?

MS. WILLIAMS: No, only during the proceedings, answering questions.

(Slide.)

The objectives set forth for Phase 3 were to

assess the adequacy of piping support, design of portions of the CCW system and main steam system.

We also set out to assess Texas Utilties', Gibbs and Hill's, and PSI's and ITT Grinnell's organization and corrective action program as they pertained to design. You will hear this referred to as our Criterion I and XVI reviews. They are not a 10 CFR Part 50 Appendix B broad corrective-action organizational review but, rather, more in the framework of ANSI N45-211 design organization and corrective action as it pertains to design.

And then we verified the adequacy of the implementation of these two criteria.

So again we have a programmatic review which is the second bullet. Do they have a program in place which fulfills Criterion I and XVI as it pertains to design, and then have they implemented their commitments and procedures?

Major differences between Phases 1 and 2 and then 3 would be that Phase 3 was a detailed, intensive review of piping and piping supports. It is so documented on the checklist. You will notice differences in the checklist between the two phases.

The review in Phases 1 and 2 covered more disciplines. It was much broader in nature, but did not go as deeply into specifically piping and pipe supports as we did here in Phase 3.

MR. TERAO: Nancy, one question on program objectives.

In your CYGNA report, following those three objectives that you have on the slide there, you make a statement:

> "It is CYGNA's understanding that Texas Utilities currently holds the following principal objective in terms of the overall independent assessment program...."

Then you have a bullet, continuing on the quote:

> "The results of CYGNA's design control and technical review, coupled with previous reviews of CPS' CAT and SIT, provide the NRC, the ASLB, and Texas Utilities with an integrated basis for evaluating the adequacy of the design and the design process employed by CPS CS."

What gave CYGNA the understanding that that was Texas Utilities' objective?

MS. WILLIAMS: Discussions with Texas Utilities and their plan.

MR. TERAO: So in your discussions with Texas Utilities, it is your understanding that Texas Utilities was relying on the CAT and the SIT evaluations in combination with with CYGNA review to establish the overall adequacy of Comanche Peak?

MS. WILLIAMS: I know that was discussed. I wouldn't want to put words in their mouth. I would rather that they answer that question.

This is simply a statement based on conversations. But I think they would be better versed to answer that question.

MR. TERAO: I'm asking you what is your understanding, since you're making the statement and you're stating that CYGNA's understanding was as I just stated.

But you're saying that that was based on discussions, then, that you have had with Texas utilities?

MS. WILLIAMS: Yes.

MR. TERAO: It was not included in any contractual agreement or any written documents?

MS. WILLIAMS: No.

(Slide.)

This viewgraph shows the portion of the main steam system which was chosen for the review. This shows one of four lines of main steamline outside of containment. This particular diagram consists of two stress problems, so we reviewed two stress problems on each of four main steamlines for a total of eight stress problems. There were approximately 70 pipe supports associated with these eight problems.

(Slide.)

This is the segment of the component cooling water system train A, which was selected for the piping and pipe support review. This is one stress problem with a total of approximately 61 pipe supports.

(Slide.)

In summary, then, for the implementation evaluations, two systems were used, CCW and main steam. The design review or implementation evaluation consisted of pipe stress and pipe support design reviews, and we checked the implementation of criteria I and XVI as they pertain to design.

And I guess I should emphasize here that this was a design review only and did not include an as-built walkdown. So this is only a look at the design side of the process.

(Slide.)

And then for the programmatic reviews, this time we checked four of the organizations. Again it was TUGCO and Bigs & Hill, NPSI and ITT where added because they were the pipe support design associations associated with the Comanche Peak project.

At this point in time I just want to state that there are still some open items associated with Phase 3. They are noted in Revision 0 to the report. We are still reviewing what those open items -- excuse me, the responses

we are receiving back on those open items, and to date I would say that the mass participation problem, rotational axial restraints, mass point spacing and the U-bolt analysis and testing program are not closed as far as CYGNA is concerned.

MR. SAFFELL: Would you go through those again, please?

MS. WILLIAMS: The mass participation, mass point spacing, axial rotational restraints as related to --

MR. SAFFELL: Is that axial-slash-rotational?

MS. WILLIAMS: You could write it that way. That's as pertaining to the pipe support design and U-bolt testing and analysis program.

MR. TERAO: Nancy, of those four open items, which ones would you characterize to be of the Walsh/Doyle allegations?

MS. WILLIAMS: U-bolts, axial rotational restraints, and that's it.

MR. TERAO: So there's two out of the four items left open are related to the Walsh/Doyle concerns?

MS. WILLIAMS: That's correct.

(Slide.)

MR. SHAO: Did you look at all the other Walsh/Doyle concerns?

MR. SHULMAN: That's going to be a major part of

the --

MS. WILLIAMS: That's the second part of the presentation.

MR. SHULMAN: -- second part of the presentation.

MS. WILLIAMS: I will list what our understanding of the allegations is, and then where you can find information on those in our reports and what we're doing about it.

MR. TERAO: I'd like to clarify one more thing.

Then of the four open items it appears that two of them, which are related to mass participation and mass point spacing, are piping related, and the other two -- axial restraints and U-bolt cinching -- are pipe support related.

MS. WILLIAMS: That's correct. Except the U-bolt cinching, you're looking at the pipe.

MR. TERAO: I guess that was my question. Is the U-bolt cinching related to the effects on the support or on the pipe?

MS. WILLIAMS: Both.

MR. TERAO: Both. Okay.

(Slide.)

MS. WILLIAMS: Okay. Now we enter the Phase 4.

At some point in time there was a revision to

TUGCO's plan in response to the board memorandum and order. And as part of that there was a request for CYGNA to submit an additional phase of the IAP which would consist of a multi-discipline review and also address certain portions of the design control program again that had not been covered in the previous phases.

We submitted our plan to Texas Utilities on Phase 4 on May 15th of 1984. This program is still under review at this point in time and no reports have been issued.

(Slide.)

The objectives set forth for Phase 4 were again a multi-discipline technical review of selected systems, which in this case was the CCW system, again with an added portion from that that we reviewed as part of the Phase 3. We performed an as-built verification of portions of the CCW system and main steam and added two additional elements of ANSI N45-211 to evaluate their implementation of them. There were no programmatic reviews associated with Phase 4. It is simply an implementation evaluation across the board.

(Slide.)

You will recognize portions of the CCW system here from our Phase 3 review. The portion of the piping analysis problem review for Phase 3 is shown down toward the bottom of this viewgraph. The added portion takes us from the CCW heat exchanger to the CCW pump. And for this

portion we reviewed the stress analysis and pipe supports and conducted walk-downs for all of the main piping you see on this slide here.

(Slide.)

We go back to the main steam again, where we conducted a walk-down of the main flow path of all four of the lines that we had reviewed from a technical standpoint in Phase 3.

(Slide.)

And then finally, as part of Phase 4, we conducted a mechanical systems review which we had not done on any of the phases prior to Phase 4. We conducted additional electrical and I&C reviews. We conducted additional cable tray and conduit support reviews -- I guess I shouldn't use past tense; we are still conducting these reviews on certain ones of these disciplines.

This viewgraph here depicts a larger portion of the CCW system that was reviewed for the mechanical systems review, electrical, the I&C and the cable trays. We did not just go in and do a mechanical systems review of the main flow path of the CCW system; we, rather, checked all the interfaces with the other systems as well.

MR. SHAO: You previously checked the entire process and walked down?

MS. WILLIAMS: I'm sorry?

MR. SHAO: In Phase 4?

MS. WILLIAMS: In Phase 4 we did walk down the main steam and CCW.

MR. SHAO: When you did the walk-down, what did you look at in the walk-down? Did you look at the pipe and the welds or...

MS. WILLIAMS: We looked at the pipe geometry, support spacing, the details of the support design as shown on the drawing, weld size, pipe support orientation, pipe support type, gaps.

MR. SHAO: You looked at everything?

MS. WILLIAMS: Yes.

(Slide.)

To sum this one up, it's a little confusing because we jumped between the systems, and that's somewhat a result of the evolution of these programs. But this viewgraph here will perhaps help to summarize that.

We did the design reviews that were listed here for the component cooling water system. We did design control implementation evaluations for design input control and design verification control with the documentation associated with the CCW system and the main steam system. Therefore design control is listed twice on this slide, once under CCW, once under main steam.

Then we did an as-built walkdown of the main

steam system and also of the CCW system, the total elements of ANSI N45-211 therefore for all four phases, for five. So we did design input control, design verification control, design analysis control, design change control and interface control.

(Slide.)

Most of what I've said is summarized here in one place for all of the phases.

(Slide.)

In the design control area I felt that perhaps this would help to clarify how all of these elements fit together.

What we show here is out of Criterion III. Where we talk about ANSI N45-211 you will see the three elements reviewed in phases one and two, and the two elements reviewed in phase four.

And then going on to criteria I and XVI, you will see the two elements that we checked implementation on for phase three. The organizations are then also listed for which these are used or conducted.

(Slide.)

This is probably a familiar side to many people here in the room out of our reports. I wanted to take a moment to clarify a few points on that.

You'll notice that CAT and SIT are listed in the

first two columns of this, and followed by CYGNA's IAP. This slide provides a cross-correlation of the scope covered by each of these five programs listed here.

I would like to make a point in saying that we did not rely on any of the information or conclusions of the CAT or SIT reports in any of the phases of our independent review.

Further, we do not verify or dispute the conclusions on any of these reviews. What we have here is simply our understanding of the contents in terms of scope of CAT and SIT based on our review of these reports. And by "review," I mean a reading through of those reports and no evaluation of backup data, assessment of conclusions, or anything in that order of depth.

MR. SHAO: You looked at design input too? What do you mean by design input?

MS. WILLIAMS: Do they transfer all the information from the loads, from the stress group to input the pipe support design. Is there a control transfer mechanism for all the proper FSAR criteria being transmitted and implemented into the design.

MR. SHAO: It is not a structure-to-piping transfer? It's not from the structure to the piping transfer, rather a response?

MS. WILLIAMS: That would be an input. You would

want to make sure that you have the correct and most up to date ARS being input into your pipe stress analysis. That would be an input to your stress analysis.

MR. SHAO: That was checked too?

MS. WILLIAMS: We did not check the ARS. In other words, we did not check the building analysis, but we checked that there was a control process, procedures in place to transfer --

MR. SHAO: Assuming that the building analysis is right in how it was transferred to the piping?

MS. WILLIAMS: That's correct.

MR. SHAO: You're saying multi-discipline; you mean including a lot of thermodynamic calculations too, or heat transfer calculations? When you say "multi-discipline," what do you mean by "multi-discipline"?

MS. WILLIAMS: What I mean is various technical disciplines as defined --

MR. SHAO: In what areas?

MS. WILLIAMS: In phases one and two we covered structural in the form of cable tray supports. We covered pipe supports, pipe stress analysis, electrical, I&C and walkdown.

And then in phase four we picked up mechanical systems review where we would get into the heat exchanger sizing cups --

MR. SHAO: These are the components. You say multi-discipline is you have mechanics people working on it, you have heat transfer people working on it. When you say multi-discipline -- I saw a couple of times you said multi-discipline. I mean what discipline are you talking about, thermohydraulics, applied mechanics...

MS. WILLIAMS: Well, structural --

MR. SHAO: Mostly structural mechanics, right?

MS. WILLIAMS: Yes. Well, mechanical system, we would be picking up engineering. Engineering and mechanics kind of overlaps in the pipe support designs and shows up again in systems review.

I guess it's our definition of a list of disciplines --

MR. SHULMAN: And maybe I would answer the question that in phase four there were disciplines or people involved who hadn't been involved at all in phase three, significant electrical people.

There was an electrical review which wasn't done in phase three, and then mechanical systems reviews. Those are the two that come to mind to me.

MR. SHAO: What kind of electrical review are you talking about?

MS. WILLIAMS: In phases one and two we checked the circuitry associated with the motor operated valve, the

control circuitry.

MR. SHAO: To make sure that it will function, you mean?

MS. WILLIAMS: To make sure that it was designed properly, to make sure that the logic was sound. And then we checked it in the field as part of the as-built walkdown.

We checked the power supply to the pump to make sure it was adequate.

Do you want more examples? I can go back to the slides and go through them.

MR. SHAO: No. I understand what you're talking about.

MR. NOONAN: Nancy, let me refer back to your viewgraph back there.

Look at the design input. I notice that you say the -- Evidently you looked at the SIT report. That's not a detailed review. And then also phases one and two of your stuff is not a detailed review.

Kind of explain that to me, what's up there. What does that mean?

MS. WILLIAMS: The asterisk?

MR. NOONAN: Yes.

MS. WILLIAMS: What does that mean?

MR. NOONAN: Yes. I want to understand it.

When you say "Not a detailed review," I would like you to explain that a little bit better.

MS. WILLIAMS: Okay. For example -- I think I can do it best through an example.

When we do our design control implementation evaluations we might be doing an evaluation of interface control, for example. But you will see an asterisk by audits. That's because a portion of our check list touched on audits because that has to do with the quality of your interfaces between the organizations, but yet we did not set out to do a formal evaluation of their audit program, per se. But yet we saw certain aspects of it as part of our review for interface control.

MR. NOONAN: When you -- Then when you go down to the next square on design analysis you see -- you looked at the SIT report, I guess, but then you decided on that one you do a full review. Is that because that was a part of your scope or was that something that you felt had to be done?

MS. WILLIAMS: That's because it was given to us as part of our scope.

MR. NOONAN: Part of the scope.

MS. WILLIAMS: We did not decide what was going to be looked at.

MR. NOONAN: Okay. Now let me walk down one

more now, the drawing control, the next one. There we see an asterisk in both columns, under SIT and also under independent phases one and two.

The same kind of explanation on that; it goes back to the design input?

MS. WILLIAMS: Correct, because as you are looking at design change control you get a feel for the drawing control system that exists on the project, and we didn't go any further than that. It wasn't formally part of the scope.

So anything that has an asterisk as far as the IAP goes is not formally part of our scope.

MR. NOONAN: If there was something in the SIT report that pointed out a deficiency, then how was that handled? I'm talking about the asterisk now, where there is an asterisk.

Let me just take a for-instance. Under drawing control, let's say there was something in the SIT report that pointed up to some deficiency. What was your effort then? How did you treat that?

MS. WILLIAMS: We didn't have anything to do with the SIT in that regard. All we did was review SIT for subjects. We did not look at the results, use the results, pursue any aspect of the results of SIT.

MR. NOONAN: All right. So you didn't even look

at the results of SIT?

MS. WILLIAMS: No. We --

MR. NOONAN: It sounds like you just looked at the content of the SIT.

MS. WILLIAMS: That's correct. We just read the document through and said, 'Here is what appears to be the categories that were covered in the report.'

MR. TERAO: Nancy, continuing on that line, the asterisks and the "Xs," I have a question about those. The "X" is a full review and the asterisk is not a detailed review.

Is that referring to the SIT review or CYGNA's review of the SIT? In other words, when you have the asterisk up there and you say "not a detailed review," are you saying that the SIT did not perform a detailed review or CYGNA did not perform a detailed review of the SIT in that area?

MS. WILLIAMS: CYGNA doesn't think that, through reading SIT's summary document, that they performed a detailed review of that because it seemed like the main thrust of SIT was a design review of the Walsh/Doyle allegations which was a technical review.

I'm aware that interface between the design organizations was mentioned in there, but in our definition of the pure sense of when you want to go in and do a

full-blown interface control evaluation, it just wasn't presented in that light.

You might interpret it differently than we did. All we did was read through the document and say this is what we can draw out of the subjects covered in the document, and nothing more than that.

MR. TERAO: So the "X" under SIT under design, are you saying that the SIT performed a detailed review although CYGNA did not review the SIT report for the design considerations in detail?

MS. WILLIAMS: Yes.

MR. TERAO: Okay.

MS. WILLIAMS: That concludes the portion on scope and objectives and purpose and an overview of the four phases of the IAP. And now I intend to go into the allegations.

If there are any questions on scope this might be a good time.

MR. TERAO: Perhaps this is a good time to go back to Vince's earlier question that was raised by Case regarding is CYGNA looking at the design QA process.

Could you explain that in terms of this matrix perhaps?

MS. WILLIAMS: I'm not quite sure what Case means by the design QA process. I guess I interpret that to mean

do they have a program in place which complies with the ANSI N45-211.

If that's what they mean, then, yes, we looked at that.

MR. NOONAN: In detail? You went through a full review of that?

MS. WILLIAMS: Yes, we did, programmatically speaking.

MR. TERAO: And where would that fall in that matrix?

MS. WILLIAMS: This matrix does not discern. This is all implementation evaluation. So program reviews do not show up on this slide here. We have to go back to the two slides I have on program reviews. This is simply an implementation review matrix.

MR. SHULMAN: Would all the categories be the same, would all the left-hand categories --

MS. WILLIAMS: What it would mean is that they have a program in place which addresses all the categories except design and as-builts. In other words, down to this point those are the major elements of ANSI N45-211.

MR. SHULMAN: Right.

MS. WILLIAMS: And we checked that they had a program in place which covered their responsibilities in that area.

MR. TERAO: I think I hear the answer, but let me see if I understand it.

You're saying in your QA review you reviewed the Comanche Peak program to assure that there was a process in place, a design process in place.

MS. WILLIAMS: That's correct.

MR. TERAO: I believe -- and I don't mean to misinterpret what Case's concern is -- I believe what they are asking is did you review the adequacy of that design QA process, not whether there was a process in place.

MS. WILLIAMS: Okay. I think that would be akin to our implementation evaluation.

In that case we reviewed five aspects of the program.

MR. TERAO: So that now you're talking about the implementation. Does that bring you back to this matrix?

MS. WILLIAMS: Yes.

MR. TERAO: Okay. Where is it shown in this matrix?

MS. WILLIAMS: Okay. What we did there was pick up implementation evaluations of design analysis control, design change control, interface control, design verification, corrective action, organization. It would be every "X" except for the bottom two lines on IAP, under the IAP.

MR. TERAO: But as I read the slide under phase three, most of what you just mentioned are blank.

MS. WILLIAMS: This is all phases together. When I'm speaking of what we covered it's all phases together. So, for example, we covered design analysis control in phases one and two, we covered interface control and we covered design change control, three elements of the program in checking this implementation.

Going on to phase three, we covered organization, which was criterion I as it pertains to design. We covered corrective action, which is criterion XVI as it pertains to design, and that would be it. And then in phase four, we are currently covering design input control interface -- excuse me, and design verification. So I guess you could say seven elements; it's just that there's five properly speaking, and the other two we characterize as criteria I and XVI.

MR. TERAO: But phases one and two, at that time you were not aware of the so-called Walsh/Doyle allegations?

MS. WILLIAMS: That's correct.

MR. TERAO: Now that you are aware of these allegations and to what extent it applied, say, to pipe support designs, don't you think that it would have been beneficial to look specifically at the design QA process in phases three or four with respect to these allegations?

MS. WILLIAMS: I'm going to go through what we think the allegations are, and we will see if we have picked those up and then where we have covered that.

But we did not choose the scope -- We did not take the list of allegations, I should say, and say, 'Okay, for allegation number five...' We never had a formal list of allegations. We had some guidance on what those would be. And I'll go into what that was.

But we didn't take, then, allegation five off of the list and say, 'Okay, what should we do to properly evaluate whether this is a concern on the Comanche Peak project.

I think your focus in doing a review like that would be different than starting out with a given system and evaluating for design adequacy with those in mind. I think they are different focuses.

MR. TERAO: Yes, I agree. But I think you're mixing in the technical concerns with the Walsh/Doyle allegations with the overall QA concern of the Walsh/Doyle allegations.

MS. WILLIAMS: I'm not sure that we are totally onboard with all of the QA aspects of the allegations.

What I have read is the memorandum and order. So that constitutes my understanding of the QA aspects of the allegations. And for that reason corrective action and

organizational independence was chosen by Texas Utilities on phase three.

It was decided, I guess, that that was the crux of part of the allegations in that area.

MR. TERAO: Thank you.

MR. NOONAN: One thing that I think the Staff is having problems with in trying to understand, there's a list of Walsh/Doyle allegations. There is a defined list of those allegations. Some of those allegations have been discussed in the hearing process, and probably some have not been.

From your standpoint, from CYGNA's standpoint, you were never given a copy of the Walsh/Doyle allegations?

MS. WILLIAMS: That's correct. We still don't have a list of the allegations. But we have documents that we've developed a list from, and I'm going to share that list with you. And it may or may not match 100 percent with the list.

MR. SHULMAN: You classified that as part of the purpose of the meeting, to put up the list of what we believe the allegations are and see where that tracks with what the Staff believes the allegations are. And the list has 35 items, I believe, that we're going to put up in a few minutes.

But that's something that Nancy has developed in

the last two weeks in terms of what we believe the allegations are. Then we have gone back, as you will see in a few minutes, and tried to track those with our reviews.

And I think I'll just let that sit until Nancy goes through that.

MR. NOONAN: It sounds like that you're saying basically that the Walsh/Doyle allegations were really not part of your review until the last few weeks when you decided to suddenly start looking at these things.

MS. WILLIAMS: No.

MR. SHULMAN: No, that's not what we're saying.

MR. NOONAN: No.

MR. SHULMAN: We're saying that the specific -- When you talk about allegations, one might say, well, there's allegation one, there's allegation 22, there is allegation 23, and, well, don't you know what allegation 22 is.

We didn't ever have a knowledge of them in that form.

MR. NOONAN: I see. Okay.

MR. SHULMAN: When you see the list it will turn out that what we believe are the allegations we have addressed in one degree or another and resolved or left unresolved and open in one degree or another.

Now do we say that's every allegation? We don't

know that. We'd like to have that explored. So that's one aspect of it.

The other aspect, as to what detail we've gone into them, that's a function of our review. And we're going to tell you what detail that is. In some cases it's great detail; in other cases it's not quite the same detail.

MR. NOONAN: All right.

Let's go ahead.

MR. MIZUNO: I'm sorry, this is Gary Mizuno. I have several questions for Ms. Williams.

When you were referring to criterion I and criterion XVI, are you referring to the appendix to the criteria?

MS. WILLIAMS: Yes.

MR. MIZUNO: Can you explain why you did not do criterion III?

MS. WILLIAMS: We did do criterion III.

MR. MIZUNO: So it's more than just a criterion I, then XVI review.

MS. WILLIAMS: This might help to clarify your point, if you can read it.

(Slide.)

MS. WILLIAMS: For all four phases we covered five elements of the criterion III, as defined by ANSI N45-211. And then we picked up design organization in

criterion I and corrective action in criterion XVI as it pertains to design.

MR. MIZUNO: Okay.

Your entire review program seems to be centered around, as far as design and design control and QA aspects, around the ANSI N45-211 scenarios.

I would know what was the basis for simply choosing the N45 as sort of the central, you know, standard that you would be using to determine whether a program exists in conformance with ANSI N45. Why not something else or why not direct them to the Appendix B criteria?

MS. WILLIAMS: Two reasons, I think.

The first, ANSI N45-211 is the implementing document for Appendix B, or the standardly accepted implementing document for criterion III defined in Appendix B.

And the second is that Draft Two, Rev Two of that document is what Comanche Peak has committed to in their FSAR.

MR. MIZUNO: I have some questions going away from scope to more factual matters.

Can you explain exactly when and under what circumstances you received copies of the SIT report and the CAT report? And I mean CYGNA.

MS. WILLIAMS: No, I don't recall how we got it.

8mpb

I would guess, time frame, early '84.

The only thing I can do is go back and check the files. It wasn't through a formal transmittal letter, or it wasn't through the NRC. I believe that we got a copy of it onsite.

MR. MIZUNO: When were you first made aware of the SIT report?

MS. WILLIAMS: We were aware of two aspects of the SIT report as part of the phase two review. And by that I mean pipe support stiffness and self-weight excitation were two areas that we felt there was some potential concern when we were doing our technical reviews for phase two.

When we pursued them further we then were informed that the SIT team had been in and that the same issues had been identified by them, and that there was some amount of activity or review associated with the resolution ongoing at the NRC. So with that we documented our understanding of that in a note to the checklist and left those items open, if you will.

At the time it was not considered necessary to have two

At the time it was not considered necessary to have two

separate parties reviewing the same issue since the NRC was already doing it. And that would be the limits of our knowledge of the SIT report at the time of phases one and two.

As we got into -- Back up one other minute there.

I think that at the time of scoping of phases one and two that there were some discussions with Texas Utilities in preparation for a meeting here at the NRC which I was not involved in. And I believe there were some joint discussions with Texas Utilities and the management of CYGNA as far as developing a viewgraph for a presentation on the scope of phases one and two similar to this viewgraph only not as complete.

(Slide.)

MR. MIZUNO: When you said you were made aware of the SIT report -- specific parts -- or you were told that the SIT review was covering certain aspects such as stiffness, were you actually provided with copies of those sections of the SIT report or did you not review the SIT report at all but were given an oral summary of what the SIT report was doing in that area?

MS. WILLIAMS: If my memory serves me correctly, we were only told that the issue was being addressed as part of that. I don't recall if we saw anything written on it. We documented our understanding of that in the report, and we received no comments back on that so we assumed that that was accurate since the Staff was reviewing the report.

MR. MIZUNO: Okay.

Are you aware that Messrs. Walsh and Doyle gave prefiled testimony? Mr. Doyle's was in the form of what was essentially a deposition of his which was attached at some point to the transcript of September 1982?

MS. WILLIAMS: We have not reviewed any of the transcripts prior to the February 1984 hearings.

And our knowledge of the history and evolution of the allegations and Messrs. Walsh and Doyle's participations in the hearings is through the memorandum and order of December 28th.

MR. MIZUNO: Thank you very much.

MR. TERAO: One more question along that line:

Are you aware of the transcript of February 10th, which is a telephone conference call between the board and Texas Utilities and the NRC Staff and Case?

MR. PIGOTT: Of which year?

MR. TERAO: Of this year, of February 10th, 1984?

MS. WILLIAMS: It doesn't ring a bell. If you tell me the subject I might --

MR. TERAO: This is where the board, the NRC Staff, the applicants and Case discussed the applicant's plan and how it was intended to be implemented.

MS. WILLIAMS: No, we do not have a copy.

For the second part --

MR. NOONAN: Let me interrupt here a little bit.

I think on that particular point you made, CYGNA probably does not have copies of those transcripts. And maybe what we ought to do is make them available to CYGNA so they can see what we're talking about here. I think that's part of our problem here; there is some kind of a communication problem. So maybe on that one particular one we will make a copy and give it to them before they leave here today.

MR. PIGOTT: If I might add, on the questions you were asking about recollections and documents, that we are answering those from best recollection. And we will go back and check our records to make sure that these answers are accurate.

For instance, if that transcript is lying in our files somewhere and we just haven't paid attention to it, we'll get back and correct that.

MR. TERAO: Thank you.

MR. SCINTO: This is Joe Scinto.

Dave, I think that that's exactly what you should do. Either if you didn't ever get it, I want to find that out. But if you had gotten it, we wanted to find out how much attention you had been paying to it.

So either way, it's obvious from the answers we've gotten it hasn't been an important focus of the work you've done. You may have it but it hasn't been an

important focus.

MS. WILLIAMS: I know that I have not personally read it. I'll check the files.

MR. MIZUNO: Let the record reflect that I am giving Mr. Pigott a copy of that telephone conference transcript. He can have it. I have copies in my office.

MR. SHULMAN: I guess at this point I just wanted to comment that as we go through the allegations there will be several other statements that we make regarding SIT and its implementation in a couple of areas of the Walsh/Doyle allegations, and we might want to come back to it at that point.

MS. WILLIAMS: Should I start part two?

(Slide.)

Now with that scope in mind, I'm going to provide some cross-correlation for you on where you would find any information on these allegations in our reports issued to date, and then what activities CYGNA still has underway which we believe may be associated with these allegations.

I'm going to first provide two viewgraphs which contain 35 allegations. This is CYGNA's understanding of what these allegations are.

There's a lot on these viewgraphs. You'll get copies of them so I am not going to leave it up for a long time. I will come back and address each one of them

specifically one-by-one in later viewgraphs.

We have taken these allegations and categorized them into four categories so that you can better understand how it fits into our review. I'm going to give you a definition of those categories, and then we'll come back and discuss how the allegations fit into each one of these categories.

(Slide.)

So here they are, all in one place.

(Slide.)

Now because of the way our scope has been defined through the various phases of the IAP, we have explored these in varying degrees of depth. And you're going to see that as I go through.

MR. SAFFELL: I wouldn't mind taking time to take a brief look at those. But I don't want to hold everybody else up.

MR. SHULMAN: Well, I think one of the reasons to look at them is our description of the allegation. I think we ought to look at those maybe, Dave, for a minute or two because I'm not even sure the wording is the same as what you would view the wording as. And I think as we get into them we're going to back on every one of them.

MS. WILLIAMS: In effect you will find that the wording is tough.

MR. SHULMAN: These are our words, again.

MS. WILLIAMS: Right.

MR. BACHMANN: Do you have any copies of these in hard copy?

MR. SHULMAN: Yes, we have a whole bunch of them.

MR. BACHMANN: This might not be a bad time to distribute them.

MR. SHULMAN: Yes, I think at this point -- I didn't want people to look at this part while we were discussing the other part, so I didn't give them out.

(Distributing documents.)

(Slide.)

The basis for the development of the list that you just looked at was CYGNA's review of the ASLB Memorandum and Order of December 28th, 1983. The SIT report where we went through and picked up the topics which were addressed within the report. A memorandum sent to myself from TUGCO on the scope extension. Now this formed the basis for our Phase 3 proposal and it's in that letter that we do have a list of ten allegations and that is the only, if you will, formal list that we have. And then we have the hearing transcripts from the two rounds of hearings which CYGNA participated in.

You'll notice that there are no findings of fact here, affidavits, case documents, anything of that nature. We did not perform the review of the historical transcripts. Without a formal list of the allegations really the only way that we could have developed a complete list of the allegations would have been a review of those transcripts, as I understand, how the whole thing evolved in time. That was not part of our charter. So as we go through this list it may or may not be complete, there may be some things on here that aren't Walsh/Doyle allegations so this was our best shot at that.

(Slide.)

I'm going to go into four definitions here and

then we'll go back and categorize these 35 allegations within each of these four categories., We'll call category 1 those allegations which we consider closed based on our review and I'll go through each allegation and tell you where you'll find that information and the extent to which we have covered it.

(Slide.)

We'll call category 2 Walsh/Doyle allegations which CYGNA has reviewed and closed on the basis of industry experience and engineering judgment. We have not, however, performed an evaluation which is to the level of justifving the engineering judgment or practice as has been requested by the ASLB. We do not necessarily think that this evaluation is necessary or perhaps that the cost-benefit is there but we have exercised our judgment and I will go through what that is.

MR. TERAO: Did I miss category 1 or --

MS. WILLIAMS: Category 1 is allegations which CYGNA considers closed based on our review.

MR. SAFFELL: You have "based on evaluation" and you have made it a point in category 2 to say "based on engineering judgment," but not on an evaluation.

MS. WILLIAMS: That's correct.

MR. SAFFELL: -- of the industry practice, if you will.

MS. WILLIAMS: Yes, the distinction is industry practice being used as a basis versus a sound engineering formulation or calculation which would be category 1.

MR. SAFFELL: That answers the question.

(Slide.)

MS. WILLIAMS: Category 3, we have placed all of those open items which remain open at this point in time either because TUGCO owes CYGNA a response to one of our questions or CYGNA is still reviewing the issue.

(Slide.)

And then category 4 are open items which don't fit into category 3 and I'll give you the specific reasons as to why that is when we go into the allegations which fit into category 4.

MR. SHULMAN: Nancy, those are generally open items though, is that correct?

MS. WILLIAMS: Categories 3 and 4 are open items.

(Slide.)

The overstressed clip angle due to U-bolt cinching forces was pursued after our participation in the second round of hearings as part of our Phase 3 review. We have noted a CYGNA cross-reference here which is a piece of TUGCO correspondence where TUGCO committed to modify the supports, to remove and/or supplement clip angle and identify the scope of the practice of using clip angles with

cinched U-bolts as being five pipe supports across the plant. Each one of those five they committed to modifying.

For thermal lock-up of anchors, in response to Doyle question 15 in my prefiled testimony dated April 12th, 1984 CYGNA performed an analysis on phase 2 reports, specifically it was two supports indicating that the thermal growth of the pipe does not overstress the anchor. In our official Revision 0, as opposed to our draft version of the phase 1 and 2 report, pipe support checklist, general note 4, notes that the stresses are thermally imposed displacements and therefore are secondary in nature and, as such, you are allowed to use three times the normal allowable and we found no overstressed conditions in the review that we conducted.

The third one on this slide, box frames with 0-inch gap, again in my prefiled testimony in response to Doyle question number 15 CYGNA performed an analysis which showed that the stresses were within allowables for the box frame. We covered both the anchors and the box frames in one response.

Now the analysis that we performed in response to Doyle question number 15 did not include the effects of pressure, we were aware of that, I believe that has been so documented in the transcripts. However, we did not feel that this effect would adversely affect the results. I

think we also stated that on the record but we had not performed the analysis at that point in time.

MR. SHAO: When you made this conclusion you performed analysis on one box frame or many box frames; how many analyses have you performed in each case?

MS. WILLIAMS: At the time of doing this analysis it was being done on one box frame located on the RHR system.

MR. SHAO: How can you reach a conclusion for that type of box frame?

MS. WILLIAMS: There were some other reviews done in phase 3 which I am going to get to.

MR. SHAO: So this is your generic conclusion for all types of box frames in the plant?

When you say a conclusion it is not overstressed, that would cover all kinds of box frames or could the same question also go to number two, does that cover all kinds of anchors?

MS. WILLIAMS: Yes. Number two we're addressing all kinds of anchors. We don't feel it is common practice to evaluate anchors due to the radial expansion of the pipe which is our understanding of what Mr. Doyle is talking about here. Further yet, our calculations, we feel, reinforce that position that when we did do them we did not find any overstressed conditions since you can compare it to

three times the normal allowable.

MR. SHAO: You say the stresses are less than 3 percent but you point me to one anchor or to three anchors but there are 40 types of anchors, you can't reach that conclusion.

MS. WILLIAMS: What you say is true, we did it on a couple, we never felt that that was normal practice to start with. We did do a couple of calculations to reinforce that position and did not feel it was necessary to go any further. We are not aware of anyone checking that condition on anchors in normal design practice.

MR. TERAO: Would you please comment on you stated that allegation two was not normal practice, what about allegations one and three, would you say those designs are normal practice or unconventional design?

MS. WILLIAMS: I would say item one is unconventional, but that gets into the cinching of the U-bolt and some other allegations as well in the whole issue which is still under study. This only singles out the effect on five supports because they had the clip angle arrangement which was not a good design.

MR. TERAO: I would like to pursue what Larry just asked: With all three of those which you consider closed out, did you address what the generic implications could be in the plant and not just what the final result was

in the scope that you had looked at?

MS. WILLIAMS: Yes, and maybe if I finish on the last item on the box frame it will help address that. I'm addressing them somewhat in chronological order.

So on the box frame there was a calculation performed by CYGNA for the ASLB hearings which, as I say, did not include the effects of pressure, it was a study that we were doing at the time for the purposes of testimony. As part of the phase 3 report, which is the reference here at the bottom of the page, pipe support check list, general note 16 within that report contains further discussion on the box frame with 0-inch gap and there we discuss the fact that again these effects are secondary, self-limiting loads which may be compared to three times the normal allowable.

TUGCO had performed further calculations in response to, I believe, an affidavit -- I'm not sure of that -- where they showed the stresses were acceptable as well. They did include pressure in these calculations, CYGNA reviewed the calculations.

We don't in all cases do independent calculations; if there are calculations available we will review them for adequacy. If we have comments on them, we will address those to TUGCO or if we feel that our comments are of a minor nature in the sense that we can still draw a conclusion based on them, even though we take exception to

a portion of them, that's how we conduct our review.

MR. SHAO: How many types of box frames in the plant, I mean, how many types?

MS. WILLIAMS: I can't answer that. We can find out for you. I can't answer that right now.

MR. SHAO: I think you have to be a bit careful if you do one calculation and draw a generic conclusion because there are different loads, different geometry, different design, different material.

MS. WILLIAMS: Yes, and you consider the temperatures and those sorts of things.

MR. SHULMAN: I think it is a fair statement to say that in general we did that.

MS. WILLIAMS: Yes.

MR. SHAO: You did an analysis and you also tried to do a generic calculation as well?

MR. SHULMAN: Or we looked at other calculations that was done by the applicant to confirm in our mind that there would be no generic implications either because that the increase in stress was not significant or this was a unique situation, whatever the reason -- the reasons were different in different situations but I think in general we considered generic implications.

MR. SHAO: The one thing you analyzed how close to the allowable. Let's say the allowable is -- what is it

two SM or one SM?

MR. SHULMAN: I don't know the answer in that case.

MS. WILLIAMS: We have all that kind of detailed information available and we can get it to you if that's something you would like to know. We did not come prepared with boxes of documentation.

MR. SHAO: The main question is did they have a big margin?

MS. WILLIAMS: Again we reviewed these things, taking all of what I think are your concerns into account, but we would have to get back with the numbers for your review.

MR. SHAO: If the allowable is three SM, if your calculation is so small, it may be nothing to be concerned. If it's close to over two SM then your conclusion can be different, you know.

MS. WILLIAMS: That's right and we consider those things as we are reviewing them for adequacy ourselves.

MR. PIGOTT: The purpose of this meeting -- if I might interrupt -- of course, from our standpoint is to identify what we consider, CYGNA considers to be Walsh/Doyle allegations and, as the listing shows, to cross-reference where we think we have addressed them.

As Mr. Shulman said earlier we are anticipating

a follow-on technical meeting where, if you wanted to get into the very detailed aspects of our review, we will be more happy to do it but right now we are responding to what we perceive as being a need for some clarification as to where we stand just generally on these various allegations.

MR. SHAO: So you don't want any technical feedback?

MR. PIGOTT: No, we want that, but what we're saying is we're really not prepared here to give complete technical justifications for these conclusions. We want you to know what conclusions we have made, where we have made them and where you can tie them in to Walsh/Doyle. We'll be more than happy to spend all the time you want going through how we got to them but we are probably not prepared to do it today because we don't have the information or probably the specific people.

MR. NOONAN: Let me address this point. I have already decided that we are going to have another meeting on this thing. This is mainly to get a conversation going here.

Let the Staff raise their technical concerns on the record and then you can pick those up as actions items to be discussed in the next meeting that we have some time later.

MR. PIGOTT: We're just not prepared to answer

them right now.

MR. NOONAN: I understand.

MR. TERAO: On these box frames with 0-inch gap --

(Slide.)

-- on the slide there, your CYGNA cross-reference in the Phase 3 report, it references the Phase 3 report. I don't think the Staff ever stated that you did not address any of the Walsh/Doyle concerns, I think our question was how did you address it, was it addressed adequately in order to satisfy the Board?

Could you tell me exactly where that was addressed? If I understand this, it was addressed in your general notes to pipe support check list. So basically that one paragraph there, this is how you addressed it?

MS. WILLIAMS: Yes, this is how we addressed it. It summarizes that and what we're providing here in terms of categorization is our conclusions on these and then the technical detail basis for that I think is what we need to get together and discuss with you.

MR. TERAO: First of all, when I read that write-up, Item 16 in your check list, I see no comments regarding the generic assessment.

MS. WILLIAMS: Perhaps inferred into this is based on the review of TUGCO's calculations and knowledge of

the results of our calculations and the results numerically of the TUGCO calculations and then a consideration of the temperatures and our understanding of the configurations of the systems in Comanche Peak, some knowledge of where box frames were used, we made a decision that we felt that it was acceptable as far as the stresses in the box frame and the pipe go.

Now we're not making any comment here on whether that's a good design for stability purposes, so I want to keep the two of those separate; I think that's another part of this issue.

MR. SHULMAN: Is that open in another area?

MS. WILLIAMS: Yes.

MR. TERAO: But I still have the concern about box frames with 0-inch gap and how it was addressed on a generic basis by CYGNA in the report itself. I understand what you're saying but my understanding is that the report does not address the generic aspects.

MS. WILLIAMS: We could write a lot more obviously and it's very difficult for you to maybe pick up some of what we've written and really give a feel for the depth we tried and I'm sure all of the details aren't there. The best I can tell you is it's part of our methodology to do that. If there's particular areas that you want to discuss to understand it in more greater detail,

then we need to sit down and discuss the basis for our conclusions. The report pretty much presents the conclusions and about the only sense of the background behind those conclusions is provided to you in our methodology in understanding how we do our work and then some raw data in our check list.

MR. TERAO: I think that was one of our major questions is that if you had reviewed the Board Memorandum and Order of December 28th, 1983, one point that the Board makes very clear is the presentation of the material and how it was justified. We expected to see a lot more detail and discussions specifically on concerns like this that are related to Walsh/Doyle rather than just a paragraph summarizing that you found things acceptable.

MS. WILLIAMS: Perhaps that still needs to be done as far as clarifying it. It's not an indication that the material is not available.

MR. TERAO: Did CYGNA have any other concerns with this box frame with 0-inch gap other than just thermal expansion of the piping?

MS. WILLIAMS: There's the stability issue, if they are using them with struts. If there's any others they will come up as I go through the slides, I believe.

MR. TERAO: I guess what I'm saying is when I read this write-up on box frames with 0-inch gap, the only

concern that comes out is the thermal expansion of the piping. Were there any other concerns with this design that CYGNA or any of its reviewers identified that may not have been put into this write-up? Were you concerned with dynamic loads, for example?

MS. WILLIAMS: In what sense, with regards to stability during a seismic event?

MR. TERAO: With respect to the design itself when you have a 0-inch gap around the box frame; were you concerned with any dynamic effects, local stresses in the frame or in the pipe?

MS. WILLIAMS: I think the answer to your question is yes, we checked it, we found the design adequate as far as the stresses of loads imparted due to seismic loads. You have the question on thermal expansion and its effects and then when you get into seismic you've also got the stability side of the question and there are certain aspects of the box frame that are still open and I'm going to get into what those are and why. I'm not sure if that's going to answer your question, but it's still open with regards to stability in some of the configurations that we have seen as part of our data reviews.

MR. TERAO: That's one of our major questions is we don't understand exactly how each of these pipe supports were reviewed. You may have looked at all of these things,

we don't know that, it's not documented anywhere because your check lists don't go into that type of detail, they don't list the Walsh/Doyle concerns, we don't know if each of the reviewers reviewed each of these designs for these type of concerns. You may find the design overall acceptable but we don't know exactly what the reviewers have looked at.

MS. WILLIAMS: We did augment the check list to pick up certain aspects of Walsh/Doyle concerns but because we didn't have a formal list of concerns we don't have a Walsh/Doyle check list, in other words, we don't have was this a box frame, did you check for thermal, did you check for seismic, what you'll see are the member stresses acceptable, has sufficient gap been provided for thermal expansion, those kinds of questions. Now they're not exactly couched in the terminology of the allegations perhaps but I think that the soundness of the engineering still comes through.

MR. TERAO: I think we'll probably get into a discussion about the review criteria later on but I did have questions about how or which of those review criterion did you consider to encompass some of the Walsh/Doyle concerns.

MR. FERRARINI: Did you review of the box frames with 0-inch gap, did that include just the box frames that had struts or did it include typical box frames that would

be tied down to a wall or ceiling or --

MS. WILLIAMS: I think we saw ones that were attached to trapezes, ones that were used as guides, ones that were 0-gap on struts, ones that were on two struts -- that's perpendicular to each other --

MR. FERRARINI: So you're saying that you did see some that were your typical box frame where it was originally attached to a building structure as opposed to a strut?

MS. WILLIAMS: I was looking back to John Minichiello here...

MR. MINICHIELLO: Yes, we did see -- there were that type of box frame, those box frames that we did see that were like that typically had gaps around them.

MR. FERRARINI: So they wouldn't fall into this category of the 0-gap?

MS. WILLIAMS: That's correct.

MR. MINICHIELLO: That's correct.

MR. FERRARINI: All right.

MR. TERAO: I have one more question, Nancy, still on category one, Walsh/Doyle allegations, then it appears that the first two items that you have listed, the overstressed clip angle due to U-bolt cinching force and thermal lock-up of anchors were not addressed in the Phase 3 report but those were addressed either in the hearings or

in the phase 1 and 2 report?

MS. WILLIAMS: For the second one, thermal lock-up of anchors, that's true. For the first one it just happens that that letter, I believe, is part of our Phase 3 questions. It doesn't appear in the report.

MR. TERAO: So you did not address the overstressed clip angle due to U-bolt cinching force in the Phase 3 report?

MS. WILLIAMS: It's not documented in the phase 3 report, that was a follow-up from the hearings to evaluate extent: how many of them did they have out in the field and what are they doing about them? Because it was out of the hearings that we gained the knowledge of the magnitude of the cinching forces and from there of course you have to go back and look at the clip angles; that was what formed the basis for us asking TUGCO the question.

MR. TERAO: How was that closed out?

MS. WILLIAMS: It was closed out by a commitment from TUGCO to provide some sort of modification to those supports which are designed in that manner.

MR. TERAO: But how was it formally closed out by CYGNA?

Are you saying that this was raised in the hearing and is not to be addressed in the phase 3 report? Why was it closed out independent of the phase 3 report?

MS. WILLIAMS: Once they go in and modify it, there shouldn't be an issue with overstressed clip angles and there were five examples of that so there's really nothing more to review.

MR. TERAO: Maybe for you but I think a lot of other people would like to know about it.

MR. PIGOTT: Dave, this was never a question specifically in phase 3. Phase 3 was formalized on March 13th and we are going ahead and looking at some systems. This is a question that arose from the hearing and was specifically taken care of as a result of the hearing. You know, it's work that we have done that addresses a Walsh/Doyle concern. You won't necessarily find everything nice and neatly taken care of in a phase. This is one where it came out of the hearing, it's handled through some commitments by Texas and that's it.

MR. TERAO: So what you are doing now is you are presenting the Walsh/Doyle allegation not as CYGNA addressed it in the phase 3 program but overall?

MR. PIGOTT: Oh yes, as all of the work that we have done from the beginning of time until the time we're here. If it is in one of the Walsh/Doyle questions we're going to try and tell you where we have looked at it and what our position is on it. It doesn't stay within the confines of any of the phases, it's our entire work.

DR. BUSH: Dave, don't forget what Nancy said originally, there's no assurance that this is the correct list of Walsh/Doyle allegations either.

MS. WILLIAMS: Or that we fully understand the extent or implications of each one of the allegations.

MR. TEBAO: I understand what you're doing.

MR. NOONAN: I understand the problem with the Walsh/Doyle concern. I'll talk to the NRC legal staff -- Joe, I would like to make a list of all of the Walsh/Doyle concerns available to CYGNA.

MR. SCINTO: I'm having trouble understanding what we mean by the list of all of the Walsh/Doyle concerns. The Walsh/Doyle concerns are boxes of material and thousands of pages. They have been summarized and categorized by different groups at different times. The Applicant has a description of them in some of its work; the Board has a description of them; we have described them in the SIT report. But that only starts the problem, it only is a generic attempt to capture the gist of it, the concerns themselves happened to come up with assertions of in this support this wasn't done right and this is another example that it's not done, lots of support, lots of information. I don't think we have what I would define as -- quote -- the list of Walsh/Doyle allegations.

If you mean to provide them with a summary of

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what we're doing, yes, there are different people's summaries of what they are, they ought to be provided with that. The only place I know of to get -- quote -- the Walsh/Doyle concerns is to take all of the boxes that Paul Chen carries around with him....

MR. SHULMAN: I think that's what we're trying to do today is tell you in terms of what our scope has been what we understand to be the allegations that we're aware of and how that tracks with what, Dave, you think of the concerns and what the Staff thinks of the concerns and what we're trying to resolve.

MR. MIZUNO: Let me throw out -- Let me make a factual statement and ask for CYGNA's opinion of the adequacy of their characterization of the Walsh/Doyle concerns.

Given as a fact or assume as a fact that the Walsh/Doyle concerns, really the ultimate place for finding them is the original documents, Walsh and Doyle's discussions of what their concerned about, being that they testified about them, being that we had a deposition of Mr. Doyle and being that they had testimony, written testimony, submitted and findings of facts which were submitted by Walsh and Doyle which are not listed in your viewslide saying, you know, what your basis for Walsh/Doyle is, can you now provide some discussion or your reaction as

to whether your characterization of Walsh/Doyle concerns is complete, given the fact that you didn't review the original materials?

MR. SHULMAN: We can make no statement as to whether it's complete. What we did do though is undoubtedly the ones that we have found -- in some fashion or another we have come in contact with and we have attempted to address as we thought was appropriate in the scope that we are performing.

MR. MIZUNO: What was the basis for choosing these four items as the basis for coming up with the -- quote -- Walsh/Doyle concerns as opposed to something else?

MR. SHULMAN: I'll let Nancy answer that. I believe that it goes to the document that we have been using or been privy to over the last six or seven or eight months. Now that's a very quick statement. I think, Nancy, you might want to amplify that.

MS. WILLIAMS: We're not on the service list so this essentially amounts to those documents which we have in our possession which we understood to be fairly important documents, if you will, but we also recognize that they weren't of the level of detail that you would garner from a review of historical transcripts or many of the documents that you just mentioned and we would have to go back through those to come up with a formal list; we recognize that.

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This is our attempt, based on the documents that we had available to us, as we embarked on the phase 3 review.

MR. MIZUNO: Assuming -- and this is in a hypothetical sense -- assuming that for instance the Staff would be willing to provide CYGNA with all of these historical materials, would it be within your scope of your contract with Texas Utilities to look at these things and to --

MS. WILLIAMS: Not currently, no.

MR. MIZUNO: Thank you.

MR. SCINTO: That's the point, I want to make the point that we of course would make them available to you, we have made them available to everybody, they're all over in public document rooms, all it means is another copy to CYGNA so there's no problem with making it available to CYGNA.

MR. MIZUNO: If they want them I can make that commitment now to make them available.

MR. SCINTO: But if you made them available it doesn't sound like -- you still have your contract with TUGCO that you're working under and we want your understanding of what the scope of that contract was.

MR. TERAO: I think I would like to express one concern at this point -- I think it's an appropriate time: I think our question was not specifically how did you address the Walsh/Doyle concerns and, by giving an

item-by-item list, that was not our question in the November 21st, 1984 phone call; the question was more aimed at how were these Walsh/Doyle allegations addressed and that is what you are providing us now, at least a cross-reference. But it tells us where to look but it still doesn't address the question how was it addressed.

MS. WILLIAMS: I'm trying to summarize our position on these with a little bit of background very briefly here in this meeting. I think that specific details on either our interpretation of the allegation or the basis for our resolution, it would take a lengthy meeting and perhaps that's the purpose of having a follow-up technical meeting.

MR. SHULMAN: Maybe a general statement is it was addressed as they came up, as we performed our phase 2 review. And in fact if you read the proposal from CYGNA to Texas Utilities, I think it says, the words are we will address Walsh/Doyle issues as they pertain to our scope of work.

Is that the right wording?

MS. WILLIAMS: That's correct. Again we did not take an allegation and pursue it throughout the plant if we didn't find an example of it within the CCW system or the main steam system.

MR. SHULMAN: Now there is an issue that Nancy

mentioned to me the other day which I don't think is on this listing which is upper lateral restraints on steam generators. Well that wasn't part of our scope so that particular issue we did not address in doing the scope.

MR. TERAO: We wouldn't expect you to either.

MR. SCINTO: May I interject for a moment? Let me see if I could characterize some of the questions here: it is not only limited to your scope, it also is limited to you chose a set of documentation to review to determine what the Walsh/Doyle issues were, I think you outlined them, there were four documents that you laid out, one was the Board's. What I think I heard is CYGNA itself didn't feel it was part of its job to go look at the Walsh/Doyle stuff and take CYGNA's view of what Walsh/Doyle's concerns were. CYGNA took other people's views of what the Walsh/Doyle concerns were and then took those and used whatever inferences you derive from that to do your review.

MR. SHULMAN: Keep in mind that this list was developed after the fact.

MR. SCINTO: I'm understanding what the issue is, I'm not complaining about it.

MR. SHULMAN: What you see is by and large there's no blanks on the right-hand side of any of these 35 allegations. To some extent we have addressed each one of them.

MS. WILLIAMS: This nice, handy cross-reference was developed after the fact. It was part of our charter for phase 3 to bear in mind our understanding of the allegations as we checked each pipe support.

MR. SCINTO: But an understanding you derived from descriptions made by others. CYGNA itself did not go to look to derive --

MR. PIGOTT: Joe, that's not completely correct because we lived through the hearings where we got our own understanding of Walsh/Doyle concerns. But the documentary basis is what has been provided.

MR. SCINTO: That's what I saw, I saw four documents referenced and I didn't see in that discussion how you used your --

MR. PIGOTT: The fourth item is the transcripts of the hearing.

MR. SCINTO: That may be. Fine. Thanks, Dave, that helps out. I didn't remember.

MR. SHULMAN: I would again say -- and correct me -- that it was the hearings that largely drove most of the work that we did in regard to the Walsh/Doyle allegations, not even the other documents, I would say it's largely the hearings.

Is that a true statement, Nancy?

MS. WILLIAMS: No, I guess I would clarify that

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by saying that we covered a very limited number of them in the hearings but yet it gave us a feel for what direction the allegations were coming from. But we cannot really develop an independent judgment on the merits of each one of these allegations without full understanding of them from the historical transcripts that you have just been discussing.

MR. SCINTO: I wasn't even getting to that point, I was getting to the point of where you got the list of it. You got the list from one component, an important one, your experience in the hearing. The other places that you got them from were other people's characterizations of Walsh/Doyle allegations.

MS. WILLIAMS: That's correct.

MR. TERAO: One more question, Nancy, is that I recognize that you were deeply involved with the hearings but you were not the originator -- or the CYGNA reviewer themselves, did they review the transcripts in detail to understand what they concerns were?

I recognize you know what the Walsh/Doyle -- or some of the Walsh/Doyle concerns are but how do we have any assurance that the reviewers who were doing the work for CYGNA understand it?

MS. WILLIAMS: We brought what we felt were key people to the hearings with us so that they could hear them.

certain key people, group leader level, project engineer level, reviewed transcripts as part of the development of the check list. We modified our criteria to make it a little more detailed and clearer in certain areas and the decisions as to review scope and depth and acceptance of our criteria documents resides at the project engineer, project manager level with direction given by -- those of us who were very actively involved in both the hearing and the preparation of testimony for the hearing were also involved in providing guidance and development of the check list.

MR. TERAO: So you're now relying on the CYGNA design review check list as a method to educate your reviewers on the Walsh/Doyle issues, at least to alert them to the type of potential deficiencies related to them, is that correct?

MS. WILLIAMS: Not solely, no. There is an awful lot of interaction that goes on when you've got all the reviewers together down on the site and not only that all of the designs and drawings are reviewed by people who have been involved in the hearings. Even after a reviewer has completed the check list there is many times several iterations on the completion of the check list for a given support.

So for example if the reviewer missed a box frame with 0-inch gap because, as you say, that's not explicitly

an item on the check list but yet thermal expansion is an item on the check list, people who were involved in the hearings would be also looking at that drawing and looking at the check list and it's at that point in time within the project reviews that those discussions would take place.

MR. TERAO: Would those project engineers review every support drawing that the reviewers had looked at, too?

MS. WILLIAMS: The group leaders and project engineers went through every check list, as did I.

MR. TERAO: And the check list includes the drawings?

MS. WILLIAMS: And it includes the drawings. We're still human but we tried it, that was the attempt.

MR. GRACE: Are you going to present results for that?

MS. WILLIAMS: Only to the level of summary, as I discuss each one of these and know results on each of the phases per se.

MR. NOONAN: Let's take five minutes.

(Recess.)

MR. NOONAN: I would like to go back on the record at this point in time. We are going to run into schedule problems here very quickly. I would like to, if you can, get through the rest of your discussion by 11:30. That is only about 25 minutes. I need to call a halt at that time because we have other meetings scheduled right after that. So I would like to go ahead and have you proceed through it. Okay?

We will talk some time later about another meeting to talk about the more technical aspects of what you're doing.

(Slide.)

MS. WILLIAMS: Okay. Number 4 in Category 1. We have oversize bolt holes in the distribution of the shear forces between the bolts due to any difference in size between the bolt holes and the bolt diameter.

As part of our prefiled testimony in response to Doyle Question No. 16, as part of the ASLB hearings, we performed a base plate study which demonstrated that the shear forces do get distributed between the bolts. We have documented some reference to that study in our official Revision 0, Pipe Support Check List, General Note 5, of Phases 1 and 2.

No. 5, allowables for A-500 tube steel, again is part of the prefiled testimony of April 12th, '84, in

response to one of the Doyle questions which-- I'm sorry, I did not put the reference down. I can get that.

An official code interpretation was provided which confirmed TUGCO's use of the higher allowables for A-500 tube steel.

No. 6, undersize weld errors and weld calculations. There are several references in our Phase 3 report which are listed here in the forms of Observations PS-04, -05, -06, and -07, where we discuss certain types of calculational errors and undersize welds. I will quickly summarize what each one of those observations is for you at this point in time, but they are available in the report.

Observation PS-05 deals with three-sided welds and the fact that they have not used the proper center of rigidity when compared to the working point of the members.

Observation PS-06 documents CYGNA's findings with respect to a combination welded bolted connection where they did not size the weld for 100 percent of the load.

Observation PS-07 relates to incorrect methods in weld design for composite tube steel sections where, in this particular instance, we requested that TUGCO go back and check every instance where this type of design was employed on the pipe supports for Comanche Peak because we felt that the errors we saw in this particular instance were severe enough to warrant follow-up review.

(Slide.)

Item 7 in Category 1, Richmond insert allowables and bending stresses. This refers to the allowables developed in the testing that has been done on the Richmond inserts as well as the combination Richmond insert tube steel connection.

CYGNA has reviewed TUGCO's evaluation of the Richmond inserts for tube steel connections. Based on an affidavit which was filed by Texas Utilities, including calculations, the connection was determined by CYGNA, after review of these calculations, to be adequate to resist additional loads due to torsional loading on the tube steel.

8, consideration of frictional loads on pipe support designs. In Phase 3 we wrote observations with the Observation PS-08 documenting a potential concern in this area, but after further evaluation and internal discussion on the matter, we have invalidated the observation.

The particular bases for that invalidation are provided in the Resolution section of the observation, but basically what we found was the 1/16th inch limitation which they've employed on the project is perfectly acceptable and consistent with industry practice.

There is more detail on that observation if you choose to pursue it a little further.

Item 9, conflicting section properties in

separate editions of the AISC manual were employed by different design organizations at Comanche Peak. General Note 9 to our pipe support checklist on Phase 3 summarized the examples which CYGNA found during our review of use of the 7th and 8th editions of the AISC manual.

We found no design impact and in fact TUGCO later issued a DCA, a design change authorization, which changed their pipe support design specification MS46A to adopt both of those editions.

Item 10, cable tray damping values. This was particularly born out of the hearings which we participated in. It may or may not be one of the issues on the Walsh/Doyle list. The discussion at that point in time centered around the use of welded structure damping values from Reg. Guide 161 versus bolted.

CYGNA still stands behind its position that we provided in response to Walsh Question No. 5 in our prefiled testimony where we feel that the use of damping values for bolted structures for cable trays as a system was perfectly appropriate.

I have also down here some reference to the Phase 4 review. That's because cable tray supports and conduit supports are specifically part of the Phase 4 review so there will be some further documentation on their position in that report.

Item 11, local stress effects. Again the Phase 3 pipe support checklist, general note 3, summarizes the findings for wide flange and tube steel composite sections and no overstress conditions were discovered. In the prefiled testimony we also prepared an evaluation of the effects of punching shear and tube steel wall flexibility and its effects on welds. That is documented in our response to Doyle Question No. 2.

This item on local stress effects is not piping local stresses. That will be on another one of our listings of the allegations. This has to do with connection calculations and joints and this sort of thing on the pipe support design.

Item 12 on Category 1, U-bolts intended as one-way restraints but which actually function as two-way restraints.

We found no supports which violated our criteria document for pipe support design, Section 4.1.2, which requires that sufficient gap be provided to permit motion of the piping on restraint direction, so we did not pursue this any further. If our understanding of this allegation is correct, we saw no examples of any improper design practices in this area.

Correction action program I have documented here as closed out because we properly performed a design or

quality assurance review of corrective action as it pertains to design in part of our Phase 3 report.

I am going to come back to this as Item 6 in Category 3 again because there are certain aspects of our on-going technical reviews that are causing us to go back and reevaluate this as we get more information. I will discuss that when we get to Category 3.

Item 14, differential seismic displacement for beams which span floor to ceiling, and that should be "or wall to wall."

There are three pipe supports in their associated checklists listed here which are listed on our Phase 3 scope. These were the only examples that fit into this category in Phase 3.

And in the case of the first one in Checklist PS-08, there was a notation in the calculation which states that seismic movements need not be considered since they were minimal in this particular application. We concurred with that judgment of the original designer.

The remaining two were provided with slip joints which would be a proper design for these particular configurations, so we found no problems with the three that we looked at, and therefore no further expanded review is warranted.

MR. TERAO: On that point, floor to ceiling and

wall to wall, you said that the displacements were small, therefore you accepted the designer's judgment.

MS. WILLIAMS: On the particular application.

MR. TERAO: Shouldn't this fall under Category 2, where you accepted it by judgment? Did you do any calculations?

MS. WILLIAMS: I believe that we checked the numbers relative to--

Where was this equipment located, John?

MR. MINICHIELLO: It was located in the aux building. It was between two walls in the aux building.

MS. WILLIAMS: And it was in a corridor?

MR. MINICHIELLO: I believe it was a corridor.

MS. WILLIAMS: Is that correct? It was differential displacements where you not talking about spanning buildings or something where you are going to have--

MR. TERAO: No, my question is more why is it under Category 1 rather than Category 2?

Category 1 is items that were closed based on CYGNA's evaluations.

MS. WILLIAMS: I don't think this is a judgment. I think if we had to perform a back-of-the-envelope calculation we could to show you why that was. I don't consider that an engineering judgment at all. I consider

it a factual statement, that's it is not a problem. And we could show it by numbers very readily on the pipe support calculation.

MR. TERAO: But you still accepted it based on your judgment that the displacements were small?

MS. WILLIAMS: I think I want to be careful what I'll call engineering judgment and maybe what you are calling engineering judgment. Something that we can run a hard number on very quickly is to me not a judgment. It is something that is a basis for which we either agree or disagree with what the original designer did, and we can prove that readily in the numbers.

An engineering judgment to me is something much more broader in nature which speaks of industry standard practice as compared to Comanche Peak. And you are going to see a big distinction between those in Category 2 and the type that I am talking about right here.

MR. TERAO: Maybe based on your definition you would put it under Category 1 but I believe, at least for that support without a slip joint, it should have probably gone under Category 2, under my interpretation.

MS. WILLIAMS: Okay.

MR. PIGOTT: Why don't you hold that until we go through these technically and we'll see whether or not the actual evaluation is of a level that justifies being in this

category as far as you're concerned.

(Slide.)

MS. WILLIAMS: Modeling of beam members is torsionally rigid. We don't have a specific note on this. The only thing that we can refer you to are the checklists and any one of the pipe support reviews that were done in any of the four phases.

But what we did do was check each model, STRUDL model which was developed to design the pipe supports originally. We checked all of the input data. We checked all of the geometry and did an actual point-by-point check on the models, and we found no examples where this was done.

So again there was no basis for any expanded review. The models that we looked at are perfectly appropriate with the exceptions of any unsatisfactories that you will see on the checklist, but nothing dealing with torsional rigidity, or the assumption of it.

16, skewed welds. In our prefiled testimony in response to Doyle Question No. 9, there was a discussion on the design practice that is employed by Grinnell and NPSI, and the limitations that they place on the degree to which the welds can be skewed, and how they set out to perform calculations on them.

And we found no problem with the design procedures and no violation of the procedures in

application, so again there was no reason for any expanded review based on the review scope that we had before us.

MR. TERAO: Did you find a design procedure which specifically addressed how to calculate the effective throat of a skewed weld?

MS. WILLIAMS: John?

MR. MINICHIELLO: Just as for an example, yes, we found a procedure that had -- number one, it had a set of tables that said for certain degrees, for like a trunion to a trunion where the cable changes continually as it goes around the weld, it would give you what the appropriate throat would be to use in the calculation. I believe it was either ITT or NPSI that developed a set of tables for that, and reviewed the basis of the tables.

MR. TERAO: Yes, I recall that in your prefiled testimony, Nancy, on this particular item what you addressed was the skewed angles for intersecting tubes, cyindrical tubes. But I am asking is there any procedures for skewed welds where you would have, say, two tube steel members at a skewed angle?

MS. WILLIAMS: Did we see any examples of that?

MR. MINICHIELLO: Yes, we did see examples of two pieces of tube steel or-- Yes, we did see examples of that. I would have to doublecheck. I believe we did see procedures from ITT or NPSI for how to calculate the throat.

MS. WILLIAMS: And is it correct to say that we found no problems with the calculation of--

MR. MINICHIELLO: That's correct.

MR. TERAO: Part of my concern is that you're relying on the testimony, your prefiled testimony, which addressed one aspect of the skewed weld whereas perhaps there could be many other aspects of skewed welds which were included under your Phase 3 report that have not been addressed.

MS. WILLIAMS: Okay. The only incorrect or inappropriate weld calculations or weld sizes that we found during the course of our review are documents in the observations. And my use of reference to the prefiled testimony is more to exhibit our understanding of what the issue was and then the fact that that was not a problem once we got to discuss it.

And I believe that Mr. Doyle concurred with that example so at that point in time, there was no basis for us to understand whether he had other examples that we were not aware of, but we saw none in our review scope that were inappropriate calculations for any kind of skewed configurations, except the instances noted in the observations.

MR. TERAO: Let's continue.

MS. WILLIAMS: Design organization interfaces.

We performed those reviews during the course of Phases 1, 2 and 3. We found no problems which warranted any kind of further expansion of that.

I would note, though, as part of the technical reviews, this was a quality assurance review where all the procedures were in place. We found they were following their procedures and we found that the interfaces appeared to be working smoothly.

We still continually go back and reevaluate that as we find technical issues, so I would still consider a certain aspect of this similar to the aspect of corrective action as still open in a manner of speaking, because we have to go back and reassess whether any of the technical problems are a result of an interface problem. And that can't be done until we finish our technical reviews for Phase 4.

But as I say, the quality assurance review demonstrated the procedures were there and they were following them, but we'll get more detail from the technical reviews and we are going to reassess it.

(Slide.)

MR. PIGOTT: Nancy, before you go to Category 2, although these first 17 items CYGNA now considers closed, how many of these items do you consider validate a Walsh/Doyle concern, that it was a proper concern?

MS. WILLIAMS: Five.

MR. TERAO: Could you tell us which ones, specifically?

MS. WILLIAMS: Sure. Item 1, overstressed clip angles; Item 6; Item 7, Item 11; certain aspects of Item 13. That makes five. And I might perhaps add certain aspects of Item 17, which would maybe make six.

I hesitate on those two only because we haven't completed our reassessment of that with the technical results.

Category 2. Just to refresh your memories here, now we're going to go into a category where there are five issues which we have formulated an opinion or a judgment on based on standard industry practice and CYGNA's experience with standard industry practice.

We, however, have not embarked on a very detailed parametric study of any sort which would be perhaps commensurate of the detail being requested by the Atomic Safety and Licensing Board.

MR. TERAO: Before you leave on Category 2, Category 2 includes items which were written off, based on your standard industry practice and engineering judgment.

One of the major issues involved in this hearing has to do with the practice of cinching of U-bolts. Back in I believe it was the February hearing, you testified when

Judge Block asked you, Ms. Williams, do you know whether it is industry practice to cinch these U-bolts down around pipes, your response was our engineers felt that it was, that it was an acceptable approach to developing a clamping force.

So back in February of this year, it was CYGNA's position that it was standard industry practice to cinch down U-bolts. But now in the Phase 3 report, under Observation PS-03 it is stated that in standard designs the U-bolt is not tightened, which permits the pipe to rotate freely.

And furthermore, in your November 6th letter from CYGNA to the NRC, some possible examples of non-standard designs discovered during CYGNA reviews are a cinching of standard U-bolts to perform the function of a clamp.

Could you explain the change in CYGNA's position regarding industry practice and the cinching of U-bolts?

MS. WILLIAMS: A couple of facets, and much of this I addressed in my recent affidavit, which is that at the time of entering the hearings, we did not know the magnitude of the cinching forces because we did not review installation procedures. It is our understanding that that is where the information was obtained by Mr. Doyle when he raised the issue.

We looked at them during the original Phase 2

review as if they functioned as clamps.

We made no judgments as to the magnitude except that we felt that in the case of the piping system we are looking at, the size of the pipe, that it would not be necessary to have very much cinching force to render this support stable.

And there are types of U-bolts you can buy where they would function as a clamp.

We got into the hearings. We were made aware of the magnitude of the cinching forces, and when we went back to reevaluate what the effect was, then we began to educate ourselves on the fact that what we've really got here was not something that was a standard U-bolt intended to function as a clamp and that there were uncertain forces associated due to the pretensioning of them, and that there were a lot of varibles which we had not originally considered.

And it was our charter, as we understood it from the Hearing Board, to function as an independent reviewer and as information is made available, to continue to assess that information and to hopefully not continue to maintain our original position just for the sake of maintaining a prior judgment but, rather, to assess everything as information is made available and offer the best technical opinion that we can.

MR. TERAO: The thrust of my question really goes to standard industry practice. Are you saying that at the time of the February 1984 hearings CYGNA was mistaken regarding what standard industry practice was?

How does the standard industry practice change? I agree CYGNA's position would change.

MS. WILLIAMS: We at this point in time haven't pursued the industry practice aspect of it any further, only because there is an intensive program that was committed to, which we are reviewing, and if they can-- If Texas Utilities wants to commit to doing a testing program for any kind of component to qualify, and if that testing program and analysis program is found to be reasonable and acceptable, then I don't think that the issue of industry practice becomes quite so important, but, rather, you're assessing something specific, then, to a particular plant, and we haven't pursued anything other than the technical aspect of it right now.

MR. TERAO: It's very important to us, since you have five items here that were written off on common industry practice and engineering judgment.

I still would like to know--

MS. WILLIAMS: But U bolts aren't on this list, David.

MR. TERAO: That's not the point. The point is,

were you incorrect when you made the statement in February of 1984 regarding what standard industry practice is?

MS. WILLIAMS: With the cinching forces, I would say yes, that that's not standard to put 60 or 80 foot-pounds on that particular type of clamp. But, again, we didn't know what kind of forces we were dealing with, going into the February hearings, or anything about the Walsh/Doyle issues until early '84.

MR. TERAO: Your reviewers at the time believed it was standard practice to cinch down U-bolts,. and now you're saying that it is not.

MS. WILLIAMS: They have seen U-bolts used as clamps.

Now, when you say "cinched," you're getting into another aspect of the problem that we weren't aware of in terms of magnitude.

MR. SHULMAN: I mean, if it were 2 pounds would you consider it industry practice, or 1 pound, or some number that at that point you considered adequate to apply the force to the pipe?

I hear you asking--

MS. WILLIAMS: At the time that was how we were thinking, yes.

MR. SHULMAN: So the issue is, we don't think cinching down of a significant force, greater than 10 or 20

or some number is industry practice, but if the force was small enough we might still consider it industry practice; is that what your answer would be?

MS. WILLIAMS: I think that's possible. And I believe that our discussions with the senior review team and also our own reviewers have indicated that we have seen examples like that.

Now, we cannot compare the specifics of the U-bolts; we just have not embarked on that type of study because we do not feel the resources were best expended in that area.

MR. SHULMAN: But we never made a judgment, as we have in the Category 2 items, a final judgment that that issue was written off because of industry practice, whereas in these five cases our position is that these are industry practice.

But if you were incorrect on this industry practice back in February, what assurance do we have that the viability that this is standard industry practice is still valid?

MS. WILLIAMS: I think two-fold: We have a senior review team which I believe are people who are fairly well respected within the industry, and we have discussed these issues with them; they are very aware of them, they participated in the review of this particular presentation

today. The second aspect of the problem is that you can check for yourself, to some degree, whether you think that this is a reasonable list, and then you can discuss with us why you think that it is or it is not. This is the purpose of wanting to have a dialogue with you.

MR. NOONAN: Let me ask the question: Who is the senior review team you refer to?

MS. WILLIAMS: Dr. Bush, Dr. Kennedy and Mike Shulman.

MR. NOONAN: Dave, maybe what we ought to do is to try to talk with those individuals, independent of this meeting, to go into that aspect of it.

MR. SHULMAN: I would just like to repeat: there are two points here. One is that there was a different circumstance at that point in terms of what we thought the magnitude of the force was, the second is that we never got to the point of categorizing that the same way we've categorized these five. Before that ever got to the point of resolution we had other information, so it never proceeded in that way.

MS. WILLIAMS: Dave's point is, originally when we accepted it in Phase 1 and 2 we looked at it and we thought that it was acceptable to function as a clamp, and we moved on. And then some further information came to light during the hearings which we have continued to re-evaluate.

I think his concern is, well, how good is the judgment, then? And I think that a lot of our focus has changed, too. Members of our senior review team have changed since Phases 1 and 2. Phases 1 and 2 were never meant to be anywhere near as detailed as Phase 3 is on these particular aspects of the allegations. You can look at the purchase order and decide for yourself. I mean, it just was not the kind of depth and scope that we're talking about that CYGNA has pursued in Phases 3 and 4.

MR. TERAO: Let's continue.

MR. MIZUNO: I have two questions, I guess still on the same question, I guess a point of clarification.

For the Phase 1 and 2 efforts, the senior review team, you indicated, changed, the membership of this review team changed from Phases 1 and 2 to Phases 3 and 4?

MS. WILLIAMS: That's correct. It was more of a managerial overview focus in Phases 1 and 2 with John Ward.

MR. MIZUNO: I guess one question on this U-bolt thing, just to get it clear in my mind. The information regarding torque and cinching forces that apparently was the factor which caused you to change your mind regarding whether this is a standard industry practice or not, was that the kind of information which could have readily been seen, or, I guess, discovered, identified in the documents that were reviewed by CYGNA in the Phase 1 and 2 effort?

MS. WILLIAMS: No.

MR. MIZUNO: No. Thank you.

(Slide.)

MS. WILLIAMS: Category 2. We have five items. They are fairly self-explanatory.

I think the inclusion of deadweight in the pipe support design, there are two references: one in the Phase 1 and 2 report, one in the Phase 3 report, where we note the fact that when we have large frames a STRUDL analysis was performed which did include the deadweight, and when you get into the smaller components such as struts, then they were not included. It is our experience that the inclusion of something like a component such as a strut is not unusual within industry practice.

The second one: local pipe stress is due to line contact between the pipe and the support. We have internal documentation only. It is a documented opinion of the senior review team, and it is based on Dr. Bush's participation in industry groups where this has been actively pursued, and a status of where the issue resides at this point in time.

The third one: modeling of axial rotational restraints in the stress analysis was discussed at fair length during the hearings. We have updated in our Revision 0 to the Phase 1 and 2 report portions of this

discussion out of the CYGNA transcripts.

We find that our understanding is, from having reviewed and participated in the performing of stress analysis, that the inclusion of rotational restraints, or the lack of inclusion of them in the sense of modelling two struts or one strut, are different methods. Yes, you're going to have some difference in your results. But we don't feel that one is necessarily in all cases more appropriate than the other; in fact, we feel in some cases the modelling of the single is more conservative.

The fourth one is acceptability of the 5-degree installation tolerance for struts. This also was discussed during the hearings. The transcript portions are noted here for your reference, where we basically state the position that it's our experience that this is industry practice.

We have done some surveying around the industry with regard to this issue, and it has pretty much confirmed our position; in fact, in some cases, we've found larger than 5-degrees being used.

The fifth item is calculation of pipe support stiffness without consideration of baseplate flexibility. We addressed industry practice in our response to Doyle Question 14 in the form of some discussions that we had with the Seahawk members who are studying the effects of baseplate flexibility in column design, and we attempted to

try and document the current state of the art in this regard. And that's as far as we pursued it, because it's not our experience that people include this all the time in their pipe support design, it is, rather, something that perhaps is evolving with time.

MR. PIGOT: Before you go on, it should be clear that we're rather -- I don't know what the best adjective is, maybe "neutral." We recognize that the Board has imposed a burden above what we might ordinarily do as independent reviewers to, in effect, verify industry practice and engineering judgment where we come to a conclusion.

CYGNA is not saying that they won't go through that exercise if that is required to put these issues away, as it were, one way or the other. But at the level of work to date, it has not been -- based on the judgment, it has not been the most efficient thing to launch into the kinds of studies that may be necessary to verify these judgments. They may be very, very extensive, and they may not be appropriate from a cost-effectiveness standpoint.

But I think it should be clear that because we have them in here as being closed and based on engineering judgment or industry standard, that we're not saying that's where it should end. It's just that that's where it is right now, it's our position.

(Slide.)

MS. WILLIAMS: Category 3, then. These are items which are open either because we're awaiting TUGCO response or because we are still reviewing the information that we have in-house.

The first of these is cinching of U-bolts, where I've listed our understanding of the highlights of the aspects associated with this allegation.

We have documented the fact that this is still under review as part of our general note in our Revision 0, 883090, Phase 1 and 2 report.

There have been several pieces of correspondence; we've had one meeting on this matter, and we are still reviewing it.

The second is pipe support stability. This is very much tied to the outcome of the U-bolt issue. We won't make a judgment on this one until we've finished addressing the U-bolt issue.

And then I understand there's another aspect of this, which is the use of fox-rings as clamps. And that also is open at this point in time.

The third one, sizing of pipe support hardware for rotational restraints. This is open per the conclusion section, 5.4, of our Phase 3 final report. We are still awaiting TUGCO response on this particular item. Right now

we have documented our current status on this in Observation PS-03.

(Slide.)

Punching effects of tube steel around bolt holes. This was a difficult description. What we're trying to say here is that when you've got a piece of tube steel which you have holes on two opposing sides and a threaded rod, or an insert, or something like this through it, there are problems associated with the potential punching of that nut and washer through the holes due to the kinds of cinching forces that we're dealing with; for example, on the U-bolts where they've used tube steel as backing plates for the U-bolts. We're still reviewing this at this point in time.

Items 5, 6 and 7 somewhat go together. 5 is cumulative effects. That's something we're continually assessint. At the end of each phase we draw a conclusion on the cumulative effects based on the facts we have before us.

But now we've got three phases behind us, and a fourth one that we're still pursuing. And there is always the possibility that our conclusions will change with regard to cumulative effect as other technical issues are identified. And we continually go back to re-evaluate these effects.

So this is not yet complete.

The corrective action program, design verification, and I will add in design organizational interfaces, are also affected by the outcome of our technical reviews, because the facts that come to light -- perhaps problems with checkers, or something along this line, still have to be evaluated in light of the effectiveness of the program which is in place.

So for that reason they also appear as an open item until we finish all of our technical evaluations. That's kind of a final judgment, that we need to stand back and look at what we have, and have some discussion on that internally.

The eighth one, dynamic amplification factors for cable tray and conduit support designs, is open because we're doing cable tray and conduit support designs as part of Phase 4. That will have to be considered in part of the cumulative effect of cable trays that we are currently reviewing.

Item 9, governing load case and its effect on allowable stresses for the cable tray support designs. That also is still open pending the completion of our reviews in Phase 4. And we will also have to assess the cumulative effect of any reduction in safety factor due to their assumption that OBE governs at closure of our cable tray and conduit support review.

Item 10, accuracy of as-built drawings. We performed the walk-down in Phase 1 on a much simpler system than we did in Phase 4. We have completed our walk-downs in Phase 4, but we're still assessing the final checklist and the documentation, and we will not be drawing any conclusions in this regard until we complete our Phase 4 review.

(Slide.)

Now, finally, Category 4 are also open items, but for other reasons.

The inclusion of pipe support mass in stress analysis was discussed during our recent participation in the ASLB hearings, and we have documented that in General Note 1 to pipe stress checklist in Revision 0 to the Phase 1 and 2 report.

CYGNA's evaluation to date is inconclusive. It is an open item. We have also not been authorized to pursue any further work on this matter.

Item 2, support self-weight excitation -- and I'll cover Item 3 at the same time: pipe support stiffness.

These are areas that we found which we had concern with during Phase 2. The same findings repeat themselves in Phase 3.

We had some discussions with the Staff here on July 3rd where we requested some guidance as to whether we

were supposed to review these issues. I think it was agreed at that meeting that unless notified otherwise that we would just stop at having identified them, and that there were evaluations going on internal to the Staff.

So they're on an open item list as far as we're concerned, but we at this time have no intention of pursuing them.

MR. TERAO: I would like to clarify that.

I went back and read the transcript of the July 3rd meeting. The Staff did not say for CYGNA to not address it; what we said is, we believed it wasn't necessary to launch into a big research program, but we did not say that CYGNA should not address it at all.

MS. WILLIAMS: We can't address it without going into a lot of detail. And I also went back and reviewed the transcript. We can work with the Staff, we can look at the kinds of information that you have, but it's not, as you probably know, because you're looking at it, or someone's looking at it, it's not a one-week effort, there's a considerable amount of effort in assessing the impact of these issues. We think they're important issues, and we really don't want to go just half-way on them. We look for guidance in that regard, and we'll do what we're told.

MR. SHULMAN: That leaves a lot of latitude. Yes, address them, but don't go into a lengthy study. I don't

know what that means, to tell you the truth.

MR. TERAO: We would like to know why it would be necesssary to go into a lengthy study. If it was adequately addressed by the Staff in the SIT report, and if CYGNA agreed with it, then we would have some type of assurance. But to not address it at all, and to say this was addressed by the SIT and we think it should be considered, leaves the item open, in my mind.

MR. SHULMAN: Are you asking us to look at the SIT report and determine whether we agree with it or not?

MS. WILLIAMS: I don't think we can do that based on the SIT report. There's not enough content in the SIT report to make an assessment on it.

We think they are important issues. They are one of the first things that we identified in Phase 2.

MR. NOONAN: I think we understand your position basically. I'm trying to get through what we think is the scope of work that you're working on. When we talk about the SIT report, that's something I'd like to defer.

(Slide.)

MS. WILLIAMS: And this is just a summary of the breakdown of the categories, for a total of thirty-five allegations, which, again, are by no means complete, and we're not authorized to review all the historical transcripts associated with the allegations. So this is the

best cut that we could take, and we're open to any discussion you wish to have on them.

MR. MIZUNO: I had some questions. They are all focussed on applicants' motion for summary disposition of the pipe support design questions.

Did CYGNA just add that applicants were addressing some pipe support design and design QA questions in summary disposition motions?

MS. WILLIAMS: Yes. We knew they were addressing the allegations through summary disposition. We only review those that we were referred to in response to a question that you asked.

MR. MIZUNO: I see.

So applicants did not provide you with a complete set of their motions, and said this is background?

MS. WILLIAMS: I have no way of confirming it's a complete set. I have some there.

MR. MIZUNO: I seem to have heard from your last answer that you're only providing reference, or you only referenced specific summary disposition motions if in your Phase 3 and Phase 4 review an item came up and you asked a question of the utility and they responded by saying, among other things, "We have addressed this in a summary disposition motion," but otherwise you did not say...

MS. WILLIAMS: That's right; they did not give us

a whole set and say, "Here, review these and give us an independent asssessment of their responses."

MR. MIZUNO: Okay.

MR. NOONAN: Is that the end of your--

MR. SHULMAN: That's the end of ours.

MR. NOONAN: Does the Staff have any more questions for the CYGNA people at this point in time? Please limit it to the scope of work. I'd like to do that, and we can go ahead and get to the technical things later.

MR. TERAO: I think we have a lot of questions, but since we're running out of time we may have to get together with CYGNA in the near future and discuss some of our technical concerns.

MR. NOONAN: I'd like to do two things here. Mike, I'd like you to go back and look at the schedules, particularly yours and Dr. Kennedy's and Dr. Bush's, and get on the phone with at least myself and a few of the Staff members about some of these technical concerns. I'd like to do that before we have any other meetings regarding the technical matters, and then we can go into detail on the technical things.

I'll schedule that later, and I'll schedule that for whatever time it takes, whether it takes one or two days to answer that kind of questions.

Are there any other questions by the Staff?

(No response.)

MR. NOONAN: I think, with that, what I'd like to do is to call a break at this point in the meeting.

I would like particularly the applicant to sit -- John Beck and you people to sit here for a few minutes. I want to talk to you. We'll keep the meeting public, but I'd like the CYGNA people to basically maybe leave, and we'll talk to the applicant about some of the concerns that we have directly with them.

I'll keep the meeting public. I'll break for five minutes right now, and then when we get back we'll resume.

I want to thank CYGNA for coming here to the meeting. I understand the travel problems.

I think the meeting was necessary. I think at least we're hearing the CYGNA version of what we thought the scope of the--

MR. SHULMAN: I think the technical and follow-on discussions were necessary, too.

MR. NOONAN: I agree. There's no question in my mind about agreeing to that.

All right, I think we'll call a break right now. We'll continue in five minutes.

(Recess.)

MR. NOONAN: I'd like to go back on the record at this point in time.

I need to make something clear here:

We asked the CYGNA people to leave, not because -- This is still a public meeting and they are perfectly welcome to stay here. But I think that the discussion we would like to now have with the applicant, and I am concerned about the independence of CYGNA and maintaining that independence. So it is a fine line I always have to walk in this kind of a case.

I did invite Mr. Shulman and the legal staff of CYGNA to attend if they so desired; I left it up to them. But right now I need to basically address some of the things with the utility on the CYGNA effort, scope of work.

I guess, John -- John Beck, from the utility -- I am going to basically talk to you a little bit here. You can tell from the way this conversation is going today that the Staff is concerned about the scope of work with CYGNA and is it going to adequately address the Walsh/Doyle concern. And I also understand there was a board memorandum that was dated the 18th of this month -- December -- that also expressed concern about the CYGNA thing.

Right now maybe you could just quickly address what you heard today and give me your viewpoint as to what you think.

MR. BECK: John Beck.

Our viewpoint, Vince, is that CYGNA's representations today as to their understanding of scope that we charged them with in the contract is accurate. I could elaborate a little bit on that because our original intent that we've talked about in prior telephone conversations to some degree was concerned with CYGNA's independence and the specific recognition of that fact, rather than direct them or the issues that we were addressing in our summary disposition documents and have them provide detailed item-by-item review which was never intended, and I think the contracts reflect that. I think their observations today also support that fact. And beyond that...

MR. NOONAN: You never made a list of -- I keep referring to the list and I understand there is not really a list -- but a summary of the Walsh/Doyle allegations available to CYGNA?

MR. BECK: In the context that the SIT report was provided to them, insofar as that would represent a -- quote -- so called list of Walsh/Doyle allegations, yes, that was given to them. Clearly their participation in the hearing process earlier this year would supplement the so-called list, if you would.

And in the context that their contractual

obligations to us were, as they went through the reviews that they were charged with doing, they maintain an awareness and adequately address issues as they were encompassed by tht scope of work. We feel that covers it.

MR. NOONAN: Well, the Staff's got -- concern of the Staff is basically that the independent review is not going to cover all of the Walsh/Doyle issues -- quote, unquote.

We probably want to talk to CYGNA about the technical aspects of their review and get questions answered on that. And I see that as nothing more, though, than what we normally would do in any proceeding with any other licensee involved in this kind of a thing.

I would like to sit with the CYGNA people at some time in the future here, and I'll set a date on that right now. In conversations that we have, basically now I think I'd like to have Dave here talk to what they call the senior review team. And I'll make that -- if it happens to be a phone call, I'll make that a phone call where we have a reporter on board and we'll notify all of the parties. I'll have Scott Bero of the project management force for Comanche Peak do that.

MR. BECK: If I could interject a comment, Vince.

Given the experience we had in the last phone

call where we tried to talk about the scoping efforts, I would encourage a meeting in place with people across the table because we had trouble losing folks; and I turned to one of our folks and he had never been on in the first place.

MR. NOONAN: I agree with that.

MR. BECK: It would be more effective. And we certainly consider it to be a very important issue and vitally important to us that the Staff's concerns get addressed. If there are misunderstandings vis-a-vis scope, if there are misunderstandings or communication needed regarding the technical aspects of what CYGNA has done so far, I would just strongly encourage that those meetings be face-to-face and as soon as possible.

MR. NOONAN: Okay.

MR. MIZUNO: Let me comment on that.

What I hear the applicants saying is that the Staff has concerns about the scope of the CYGNA review and that therefore to satisfy the Staff's concerns should be the prime motivation behind the applicant as far as this general subject area.

I believe that that probably would be a misunderstanding of where the Staff is coming from. Our concern is that we are reviewing the total aspect of the hearings. And our basic approach in this is to address all

issues in a way that we have sufficient information for the board to be able to make a reasoned decision.

And therefore we believe that it is not sufficient for the applicants to perhaps address all of the explicit concerns which were raised by the Staff, but equal, if not more, attention should be focused upon what the board has indicated it expected from the independent review to be conducted by CYGNA because ultimately it is not the Staff that is going to be making a decision in this case, but it is the board.

We think it is useful for the applicants to review the Staff's comments on the applicant's plan and the applicant's supplement to their plan. And that -- those two documents, in conjunction with various statements made by the Staff during conference calls and at the various hearings where we discussed the CYGNA phase three and four effort, will be useful in helping the aplicants determine where the Staff's position is on the scope of work to be done by CYGNA.

But ultimately we believe that it is the boards words at these telephone calls, at the hearing, and in its various orders which the applicant should really focus upon in determining what should be done as far as the scope of work for CYGNA in phases three and four.

MR. MOONAN: Let me ask a question, Gary.

We're working on the summary dispositions down for the Walsh/Doyle concerns. When do you think that will come to -- where we have our summary dispositions on the record? I'm not asking for exact dates. I'm asking is it close or....

MR. MIZUNO: Well, this is a very sore subject, as the applicants know.

I don't think -- We're close on one affidavit which covers four of the applicants' summary dispositions. Unfortunately we got a glitch at the last moment which turned out to be a major problem in our understanding of the issue, and that's what's holding that up now.

We have a second affidavit from John Ferr which addresses another four which I have been working on.

In addition, I have an affidavit from Deak Turrow on stability which we are working on. And, as you know, we have -- That's a very complex subject and we do have major disagreements with the applicants in that area. I would say that that affidavit is not going to be ready until the middle of January at the earliest.

With regard to the other issues, Dr. Chen was in D.C. this week specifically to work on his affidavits. He should be providing me with those -- a draft, his first draft by the end of today.

And so the only ones that are remaining at that

point are the upper level restraint summary disposition, which I have not received any word from Brookhaven and which Mr. Burwell might perhaps provide us an update on that, and then the overall design QA process summary disposition, which is being done by Donald Mathurs.

And as I have stated to the applicants earlier, that cannot be completed until the Staff has completed all the other summary disposition motions, in part because we are looking to see whether any particular Walsh/Doyle issue, if it turns out to be a valid concern, whether the applicants properly identified that problem and in a reasonable fashion addressed it in accordance with the requirements of 10 CFR Part 50, Appendix B.

MR. NOONAN: I think I need to have another meeting with CYGNA to talk about the technical matters. I think that's quite evident from this meeting. I also don't want to have the meeting, though, with CYGNA until we get our summary dispositions out. I would think that that becomes important to me, get those things out and made public so we can sort of quit dancing around the subject, to to speak, here.

I understand that, you know, I know what we're doing is outside of the TRT, and that's what he -- to my dismay, I don't particularly like that process. But that's the way it was set up and that's the way we have to live

with it.

I do have to keep my commitments, though, to try to get everything done here as soon as possible so we can go back into the hearing process. And that's what is driving me right now. I need to get all of this stuff out, what we call all Staff concerns, and that has to be done. So I would like to do it as soon as possible.

Maybe what I need to do is sit with the legal staff and talk separately on how we can maybe expedite this a little bit, if that's possible.

I guess, Dave, do you want to say anything right now?

MR. TERAO: No, I have no further comments.

MR. NOONAN: With that, I don't think I see a need to continue on here. I think I sense the way the Staff feels about this thing. Maybe my frustrations are trying to meet a schedule and not getting there very fast.

I think what we'll do is basically I'll sit with the Staff again in the next few days and talk about what we need to do. And if we need to identify our concerns, I would like to do that as soon as possible. But, again, I have to wait until the summary dispositions get out this week.

So this is a public meeting and we have members from the public here. I guess I would like to at this time

offer an opportunity to representatives from the public to make a comment.

Billie Gard is here representing Case. Would you....

MS. GARD: Yes, Vince. I only have a few things.

I think overall I'm extremely disappointed in what I heard this morning from CYGNA. I think that the scope is and always has been somewhat amorphous and changes with kind of a perceived problem identified by the Staff or the board, and then it is kind of thrown into a CYGNA hopper, which is I think unfair to CYGNA and entirely inadequate for the completion or successful and acceptable completion of the Comanche Peak project. I think the methodology that CYGNA has used from the beginning with phase one and continuing through phase four is not accepted industry practice for this type audit. This is not simply a very simple industry review, and I think that's how they're handling it.

I think there are other methodologies that have been employed by other contractors when they have faced troubled projects with these kind of problems, and they are just not doing that. And I think that the implementation that results from applied methodology and an inadequate and confusing scope has put TUGCO in a position where they are

taking an extremely grave risk in going forward, trying to salvage what phase one through four has accomplished, and then sell that to the board and the Staff as some kind of definitive answer.

And I don't think it's going to work with this board, and I don't think that it's acceptable for the Staff. There are just too many holes.

And I am not reflecting on CYGNA's -- and I think they were very frank in terms of what they've done and how they've done it and what is the basis for particular statements that they made. But I just don't think it's going to work.

And I think that the risk that you're taking, John, is extremely high given the amount of time that you've got, particularly when it's not necessary. There are other ways to do these, and they are the correct way to do these things. And at some point, you know, you're going to have to come face-to-face with that reality. Of course that depends on whether or not NRC is going to require you to do it adequately. If they are going to let you get by with it, you know, maybe you can.

I certainly, in terms of representing Case, can't see how this is going to be acceptable in any way, shape or form to deal with the Walsh/Doyle allegations at a minimum, and to answer the problems that the CYGNA audit was supposed

to answer.

And I don't think Chairman Black could have been any clearer on the record to the applicant about what he expected this to accomplish. And to kind of limp in with this at the end of a year is not going to work.

MR. NOONAN: Okay. All right. Thank you, Billie, for the comment.

I guess at this point in time I don't have anything further to add to this meeting. Like I said, I will meet with the Staff and we'll talk about what we need to do further in this thing.

I think one thing I sense as part of the problem -- and I have to say this -- we have been set up under protocol where, because of trying to maintain CYGNA's independence, there is a lack of communication between the number of people involved in here. And we have become so paranoid about this protocol issue that we fail to communicate our concerns fully to the parties involved here as to what we're doing in this area. And I guess that's something I just sense. And maybe in the future I'll try to correct that.

With that, I don't have any further comments. I thank everybody for participating in this. We'll call the meeting to a close.

(Whereupon, at 12:17 p.m., the meeting was adjourned.)

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: INDEPENDENT ASSESSMENT PROGRAM - COMANCHE PEAK STEAM ELECTRIC STATION

DOCKET NO.:

PLACE: BETHESDA, MARYLAND

DATE: THURSDAY, DECEMBER 20, 1984

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

(sigt) Anne G. Bloom

(TYPED)
ANNE G. BLOOM

Official Reporter
ACE-FEDERAL REPORTERS, INC.
Reporter's Affiliation

Bahmann [illegible]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

TEXAS UTILITIES GENERATING COMPANY

Docket No. 50-445 OL
50-446 OL

(Comanche Peak Steam Electric Station, Units 1 & 2)

Telephone Conference

Location: Washington, D. C. Pages: 9257 - 9298

Date: Friday, February 10, 1984

TAYLOE ASSOCIATES
Court Reporters
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Washington, D.C. 20006
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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of:	:	
TEXAS UTILITIES GENERATING COMPANY	:	Docket Nos. 50-445 50-456
(Comanche Peak Steam Electric Station, Units 1 & 2)	:	

Room 442
4350 East-West Towers
Bethesda, Maryland

February 10, 1984

TELEPHONE CONFERENCE CALL

The telephone conference call in the above entitled matter convened at 10:40 a.m., pursuant to notice,

BEFORE:

JUDGE PETER BLOCH, Esq.
Chairman,
Atomic Safety and Licensing Board

JUDGE WALTER JORDAN
Member,
Atomic Safety and Licensing Board

JUDGE McCOLLOM
Member,
Atomic Safety and Licensing Board

APPEARANCES:

On behalf of the Applicant:

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On Behalf of the Regulatory Staff:

GEARY MIZUNO, Esq.
STUART A. TREBY, Esq.
JOSEPH SCINTO
Office of the Executive Legal Director
Washington, D. C. 20555

On behalf of Intervenor, CASE:

JUANITA ELLIS
1426 S. Polk
Dallas, Texas 75224

PROCEEDINGS

(10:40 a.m.)

JUDGE BLOCH: This is Peter Bloch, Chairman of the Operating License Procedure concerning Comanche Peak Steam Electric Stations, Units 1 and 2. The caption of that proceeding should now be in the matter of Texas Utilities Electric Company, et al. Is that correct, Mr. Reynolds?

MR. REYNOLDS: Yes, sir.

JUDGE BLOCH: Docket Nos. 50-445 and 50-446. Prior to our commencing the on the record portion of this call, there was an off the record discussion concerning the nature of the expected findings that the parties are to file. The Board indicated that the test of what should be filed is reasonable foreseeability.

If a party knows that it intends to file findings along a certain line, at this stage, without knowing the specific case being presented by the other party, they should indicate that they foresee filing findings of that kind. With respect to the detail required, not expecting the findings to be of the same nature as final findings of fact, they should indicate each of the principle thrusts of proof that the party intends to make, including thrusts that are intended to be made through cross examination.

The ability to anticipate what the other parties

cross examination will be is, of course, limited, and parties can only be expected to conform to expected findings, and to file expected findings in that area if they can reasonably expect what they are going to do in rebuttal.

Having said that, the purpose of this conference is to review a plan filed by the Applicant on February 3, 1984, entitled: Applicant's Plan to Respond to Memorandum and Order (Quality Assurance for Design.) The remarks to be made today by the parties are preliminary in nature, and they are not binding on the parties. The purpose is to assist the Applicants, who are about to undertake an extensive review, which is outlined in this Plan, particularly to be helpful in the early stages to the Applicant, which may wish to alter its plan in order to accommodate points made by the other parties, or questions raised by the Board.

Is the Staff prepared to proceed first? Or would it prefer CASE to proceed first?

MR. TREBY: The Staff would prefer CASE to proceed first.

JUDGE BLOCH: Ms. Ellis?

MS. ELLIS: Yes, sir. CASE's reading of the Board's concern indicates,to us that the Applicant's proposal falls way short of being able to fulfill the requirements that the Board needs.

We believe that there are several matters that need to be raised in this regard. We have discussed at some length in a previous Pleading the Applicant's desire to reopen Walsh-Doyle issues, and we won't go into great detail at this time regarding that.

We have already addressed the Applicant's desire to reopen the record of previous filing, specifically our February 1st answer to Motions for Reconsideration, and we won't reiterate that at this time. I believe the parties are all familiar with our concerns in that regard.

In addition, PACE does not agree with Applicant's identification of the issues. We are at this time going through and trying to analyze those, but there are some problems there. We would note that one of the things we are concerned with is Applicant's identification of issues is, in large part, self-fulfilling prophesies, where the Applicants have specified what the outcome is supposed to be to begin with. We don't believe that this is appropriate and the fact should be changed.

JUDGE BLOCH: There are two parts to what you said, Ms. Ellis. On one, which is whether the identification of issues is complete, I want to assure you that anything that is in our records, that already filed findings on, it is there for you. So the incentive is for Applicant to make sure that he understands each of the points of record he

filed findings on. The fact that the plan does not cover those will not excuse the Applicant at the end of the proceeding.

The second point has to do with the way the questions are phrased. Mr. Reynolds explained to me that the questions were phrased in this way because the proof the Applicant will submit -- to be submitted by the Applicant with respect to the 5 issues, and most of the issues listed on pages 5 through 7, are not to be addressed by the SIGNA Report but by Applicant's proof. So, he were merely outlining what was expected to be proved.

Now, I urged that if there was going to be independence on the part of some of these consultants, as we thought Mr. Reynolds had indicated, that there be a change in the wording of some of those so that they would not be self-fulfilling, but there would be an honest, objective, evaluation of these questions by the independent people. Mr. Reynolds, this is out of order now, but is that consistent with your understanding of what we discussed?

MR. REYNOLDS: Yes. My point to you, sir, was that the scope of the SIGNA Report, the charter that SIGNA will receive to do its work does not relate to the proving of anything. It is an objective, independent review of certain issues.

JUDGE BLOCH: You said the same about the professor you expect to get.

MR. REYNOLDS: That is correct, yes.

JUDGE BLOCH: And am I also correct in the procedural setting that the list of issues you have here are not going to preclude CASE from pursuing matters already spelled forth in the yellow findings, and substantiated in the record. Depend on late-filed evidence in that late findings there is evidence, not argument, it will be precluded from pursuing those, but the fact that you don't have them in the plan would not preclude them from pursuing them.

MR. REYNOLDS: Well, that is a judgment for the Board to make.

JUDGE BLOCH: Do you have an objection to that?

MR. REYNOLDS: Let me understand. You are saying that if there is evidence in the record which is addressed in CASE's proposed findings, our job to either ferret that out and address it, or assume that it need not be addressed further.

JUDGE BLOCH: In our design decision, we reviewed only a portion of those findings, and because we concluded that there were enough deficiencies, we stopped.

Now, CASE is not going to be precluded from filing findings again which repeat their present findings,

or perhaps word them a little bit more clearly, but depend on the same record, in which they assert that even after you have done what you have been referring to with me as a get well plan, that you still haven't addressed some of the substantive, technical points made in the yellow book.

MR. REYNOLDS: Well, the problem I have with that Judge Bloch, that in your Decision, while you indicated you had problems with certain issues, you also indicated that there were many issues in which you did not have problems. We are placed in the position of having to either guess what those issues were in which you didn't have problems, or reprove to you on the record matters that really don't require further proof.

JUDGE BLOCH: Well, our problem was that your proof was incomplete, and we didn't think that we should be in the business of going through the entire record once we established the incompleteness of the proof. The burden you had before our Decision was to have rebutted each of the technical points which CASE had made, and that burden is not now relieved.

MR. REYNOLDS: Well, we would hope that through this process we could have light shed on those issues which you, the Board, believe are not included in this list, but which should be included, and also hear from the Staff and the Intervenor with regard to that same objective. That is,

when we are done with this process, we have addressed the issues which are significant and open.

JUDGE BLOCH: If you have fully addressed them in your filed proof, there is obviously going to be no reason for you to file additional evidence. We are applying a different standard, I think, than you were applying in your findings. I think you understand what that new standard is.

CASE will file their detailed objections later this month, and that should indicate the principle areas basically you haven't answered. And when you review what CASE says, if you think they are fully answered on the record, that the technical answers are there, you can rest on that. But if you don't then these other matters are going to need to be answered, too.

MR. REYNOLDS: Is it clear, Judge Bloch, that the CASE is not to be raising new arguments.

JUDGE BLOCH: At this point, in terms of the get well plan, yes. Of course, when they file testimony on the SIGNA Report, which goes into new supports, they are not putting up a new argument.

MR. REYNOLDS: No, but with regard to the Walsh-Doyle allegation, those issues have been scoped.

JUDGE BLOCH: That is correct. Now, there is one exception to that. If you were to come up with new

explanations as a result of your new evidence, they, of course, can rebut those.

MR. REYNOLDS: Oh, of course.

JUDGE BLOCH: Ms. Ellis, will you continue?

MS. ELLIS: Yes, sir. Another item which needs to be considered is the part that EBASCO will be playing in this. It is not clear to us exactly what the purpose of this is, or what EBASCO will be doing.

I would point out that EBASCO itself is presently employed on site. We fail to see how their use can provide further independence. Further, it is not clear what part the listed organizations, MPSI and so forth, will be playing in this independent design review.

JUDGE BLOCH: Mr. Reynolds, would you like to clarify those matters?

MR. REYNOLDS: Yes. With regard to EBASCO, you will notice that the words are carefully chosen in this document not to suggest that EBASCO comes to the process with total independence from Comanche Peak.

Rather, they come to the process independent of the pipe support design organization and the engineer, Gibbs & Philp. The total independence that we build into this plan is provided by two things. The professor, whom we are still seeking, and by the SIGNA Review. So, we did not intend to imply, and we don't think we did by the

words we chose, that EBASCO came to the process totally independent from Comanche Peak.

JUDGE BLOCH: Does the word 'coordination' as used, is it with respect to EBASCO?

MR. REYNOLDS: Yes.

JUDGE BLOCH: Involved with respect to either the professor or SIGNA?

MR. REYNOLDS: What we envision for the professor is as distinct portions of this plan are completed, and as we attempt to meet with Walsh and Doyle to discuss them, we also will provide that information to the professor for his independent review and analysis.

JUDGE BLOCH: This is really a paper shuffling effort that EBASCO is doing.

MR. REYNOLDS: No, it is more than paper shuffling on EBASCO's part. We are using EBASCO's resources for some technical analysis.

JUDGE BLOCH: Okay. That is not with respect to independent matters.

MR. REYNOLDS: Not at all.

JUDGE BLOCH: Further proof you want to file.

MR. REYNOLDS: Exactly so.

JUDGE BLOCH: Ms. Ellis?

MR. TREBY: This is Mr. Treby. May I interrupt? This is one of the areas that we were going to talk about.

I think maybe this would be an appropriate time.

JUDGE BLOCH: Please.

MR. TREBY: That is, it was our understanding that this list of items on pages 5 through 8 are the design hardware questions that is referred to in the Board's December 28th Order, on page 74. And as we understand it, the only independent review being give to that is by the professor, and that SIGNA will have nothing to do with these items that are listed on 5 through 8.

JUDGE BLOCH: That is what the plan is, is that correct, Mr. Reynolds?

MR. REYNOLDS: Yes. I think it is an over-statement to say that SIGNA will have nothing to do with these issues. I think that SIGNA, as part of its review, since it has received the Board's Memorandum and Order of December 28th, in accordance with the Board's direction, will obviously have to review the systems chosen in light of the Board's decision.

And the items listed on pages 5 through 8 in our plan include the issues that the Board raised in its Memorandum and Order. It includes other issues as well, but it certainly encompasses what the Board decided in that Memorandum and Order.

JUDGE JORDAN: On page 3 of your plan, you say at the bottom of the paragraph: We believe that

the plan envelopes all significant issues raised by the Intervenor and the concerns raised by the Board on the pipe support design matter. I, therefore, presume that this plan is not meant to be all inclusive. Is that correct? Mr. Reynolds?

MR. REYNOLDS: All inclusive of what?

JUDGE JORDAN: All of the Walsh-Doyle matter.

MR. REYNOLDS: Are you focusing on the word, 'significant?' Is that --

JUDGE JORDAN: No. I was focusing on the pipe support design matter. You are limiting it to design. Not the inspections thereof.

MR. REYNOLDS: Oh, no, no. That is not correct. Item 1 in the tasks to be addressed, is that action process.

JUDGE BLOCH: Is that satisfactory, Doctor Jordan?

JUDGE JORDAN: Yes. I just wanted to point that out to Ms. Ellis and the parties, that there is that statement. Can you hear me now?

MR. REYNOLDS: Dr. Jordan, I don't like to get hung up on the words. Maybe the pipe support design matter, which you quoted from page 3, should be stated as something else. The Walsh-Doyle issues, however you want to phrase it, we intended it encompass all of the issues that have been litigated by virtue of these witnesses.

JUDGE JORDAN: All right, fine.

MR. REYNOLDS: For example, you might consider that Richmond inserts were not, per se, pipe support design matters, but they should be covered by this plan.

JUDGE JORDAN: Thank you, that helps.

JUDGE BLOCH: Ms. Ellis?

MS. ELLIS: All right. In regard to the independent expert which the Applicants propose, the plan appears to be deficient at this time in that they have not identified who the expert will be, and there is no identification of the criteria which will be used to select this expert.

It is conceivable, for instance, that the only criteria might be that such an expert say what they want to hear, and it doesn't explain how an expert, who will be presumably selected by the Applicant, for purposes explained to him by the Applicant, after discussions held with the Applicant and paid by the Applicant, can be considered to provide additional independence.

MR. REYNOLDS: Well, I have no response to that. It seems to me she is challenging the integrity of someone not even selected yet. If she seeks to challence this person's integrity she can do so by cross examination.

JUDGE BLOCH: I think she did a little more. She basically was raising a question about the approach

that would be made to the person, and how the parties and the Board would know that the approach is to seek someone who is objective rather than, for example, explaining litigation posture, and seeking someone sympathetic.

MR. REYNOLDS: Let's put it this way, Judge Bloch. This is our evidence. It is going to be our proof, and if, for some reason, through cross examination the board is not satisfied that the professor is not, then that would go to the weight of the evidence.

JUDGE BLOCH: Ms. Ellis, you are going to be free on cross examination to pursue how this relationship was formed. That there is some assurance of independence. In addition, Mr. Reynolds is saying that while the Board has urged that there be independence, that we are not requiring that.

And I think with respect to this matter he is correct. The independence would be helpful to the Board in lending weight to the evidence, but for the most part the Board tries to understand these technical issues itself anyway, and we don't pay great weight to the asserted independence of an individual like that. It would be helpful to the feeling of the matter, but not really essential to the point where I think the Board would require that a particular procedure be followed to find this independent person.

MS. ELLIS: All right, sir. Thank you. Shall I continue?

JUDGE BLOCH: Please.

MS. ELLIS: The next point is regarding SIGNA Energy Services to perform the independent design review. Applicant cited the Board's Order and being in accord with the Board's recommendation. However, the Board's Order clearly did not recommend SIGNA, contrary to the Applicant's assertion. The Board only stated that SIGNA appeared to be one criteria of the criteria listed by the Board in its Order.

JUDGE BLOCH: We do think that our Order issued approximately two days ago on reconsideration, spells out where we think the question of the independence of SIGNA lie. Have you received that Order yet, Ms. Ellis?

MS. ELLIS: I have received it. I have not read it.

JUDGE BLOCH: There is a portion near the end that deals with the status of this. It explains basically that you are not precluded from arguing, either now in response to the plan, or in evidence later, that this organization was not independent. We urge that it be independent. It would helpful to our confidence in the work that is done, but it is not a precluded matter of proof for you.

MR. REYNOLDS: Mr. Chairman, may I state for the record that the relationship that the Applicants and SIGNA will be the same relationship that existed for the first SIGNA review, and the criteria for independence for that review were scoped by the Staff.

Applicants didn't create the standards for independence in that review. The Staff proposed them. The same procedures will be followed here.

JUDGE BLOCH: You will also see in the Motion for Reconsideration, in a footnote, we indicated that on the present state of the record there is no evidence that persuades us that SIGNA is not independent. We understand that there may be new evidence that we have not yet seen, but at the time that we issued that decision that was our judgment on the present state of the record.

Ms. Ellis?

MS. ELLIS: We expect to change the state of the record in that regard.

JUDGE BLOCH: Okay. And Applicants are now on notice of that, I am sure.

MR. SCINTO: Mr. Chairman, this is Joe Scinto.

JUDGE BLOCH: Yes, sir.

MR. SCINTO: I just wanted to point out that in connection with the original SIGNA review run at the behest of the Staff, the Staff did not establish maximum

standards for independence. I just want to make sure the Applicant whatever he uses in this proceeding later on, in the relationship with SIGNA, it will be the Applicant's burden to demonstrate that the relationship with SIGNA was adequate, not the Staff's burden.

JUDGE BROCH: Ms. Ellis, will you continue?

MS. ELLIS: Yes, sir. Another of the matters which concern us is the Applicant poses to address only the Walsh-Doyle concern. Clearly , from the Board's Order, the Board's concern -- there appears to be no attempt by the Applicants to address those further concerns on the part of the Board.

JUDGE BROCH: If I understand, the SIGNA -- does SIGNA look at two other sections of the plant, are to be similar kind of independent design reviews as the first one they have done, is that correct?

MR. REYNOLDS: That is correct.

JUDGE BROCH: So to that extent, other parts of the plant other than just Walsh-Doyle, is that correct? Or are they just going to look at Walsh-Doyle issues in those portions of the plant?

MR. REYNOLDS: They are going to look at issues that were both Walsh-Doyle issues, and issues that were raised in your Memorandum and Order.

JUDGE BROCH: You know, we suggested that we

wanted two other sections of the plant to be looked at to assure us of the design of the plant based on our findings on Walsh-Doyle.

If I understand you correctly, you are not accepting that suggestion.

MR. REYNOLDS: It wasn't clear to me that that was the suggestion. These people will be looking at piping and pipe supports on two other systems.

JUDGE BROCH: That was not the scope of the first IDVP, was it?

MR. REYNOLDS: The first IDVP was more than piping and pipe supports.

JUDGE BROCH: Ms. Ellis, that is the answer.

MS. ELLIS: All right. I believe that basically covers our concerns with it.

JUDGE BROCH: Is the Staff there?

MR. TREBY: The first Staff concern I guess has been touched upon.

MR. REYNOLDS: Mr. Chairman, that clicking, is that on your line?

MS. ELLIS: I am sorry. That is someone trying to call in on my line. I tried to call as many people to tell them not to call as possible.

MR. REYNOLDS: Is there a way you can turn it off for now?

MS. ELLIS: There is no way that I can turn it

off.

JUDGE BROCH: Continue.

MR. TREBY: I am not giving a preliminary comment in accordance with the groundrules the Board set up at the beginning of the conference call. The first is, we had understood the Board's suggestion that there would be independent reviewers responding in detail to each of the allegations of CASE concerning hardware design problems.

As we understand the proposed plan, it is going to be CASE's allegations concerning hardware design problems are going to be addressed by a panel of the Applicant's NTSI, ITC Grannell -- it will be coordinated by EBASCO, and the only independent reviewer, and we are not quite sure what his function is, or her function is, -- will be this professor. We are not sure that that was the suggestion that the Board had made.

MR. BROCH: I think it was, Mr. Treby, in terms of the Board's authority to gain confidence in the answers and the Staff's ability to feel comfortable. How important do you think this difference is?

MR. TREBY: I think perhaps we can consider that further. I guess it depends on how much details this panel gives us as the basis for whatever their conclusions are, and how complete their review of those matters are.

JUDGE BROCH: I take it that the Staff would

try to analyze technical responses for itself whether the responses are adequate?

MR. TREBY: Yes.

JUDGE BROCH: Will you continue. Would you continue?

MR. TREBY: The second comment is we notice on page 8 that the areas that SIGNA is going to look at relates to segments of two piping systems. Our comment is we don't have very much information as to what the segments constitute, and just how extensive they are going to be looking at these two systems, so it is hard for us to come up with comments at this point.

JUDGE BROCH: Mr. Reynolds, can you clarify that at all?

MR. REYNOLDS: It seems to me it is perfectly clear. I couldn't understand what more we could say to help the Staff understand the scope of the review. From the steam generator to the main steam isolation valve. That is distinct and clear to me.

With regard to the component cooling water, that scope has not been finalized, to my knowledge, right now. And with regard to the scope of SIGNA's assessment, that also is quite clear. They will assess the piping and pipe support systems on the segments selected. I don't understand Mr. Treby's problem with definition.

It may not be pages and pages, but it tells you exactly what they are going to do.

MR. TREBY: I guess we aren't clear as to the pipe and piping support systems on the main steam line, and I guess our other comment is we will have to look at it first. Our comment goes to what our views are as to its sufficiency.

JUDGE BROCH: Mr. Reynolds, do you know how many supports we are talking about; pipe supports?

MR. REYNOLDS: I really don' What we tried to do was assess the issues in cont sy and then pick those systems where most, if not all, of the configurations would be found. I think we are talking about many, many supports, but I don't know how many.

JUDGE BROCH: Mr. Treby?

MS. ELLIS: Mr. Chairman?

JUDGE BROCH: Yes, Ms. Ellis.

MS. ELLIS: May I make one comment in that regard. We are a little concerned about this particular matter, because it appears to us that the Applicants have had more than sufficient time to have gone back and corrected many problems which were brought to light by the Walsh-Doyle allegations on these particular lines. And it appears to us that it might be more appropriate to look at one that is more of a virgin line, you might say.

JUDGE BROCH: Okay. We understand the comment. Mr. Treby?

MR. TREBY: I think those are our -- one other matter. We notice on page 3 that the Applicants indicate that it proposes to attempt to reach a stipulation with the Intervenor on certain issues, and the ultimate question of design accuracy. There was no mention of the Staff. The Staff would also like to participate in those meetings.

MR. REYNOLDS: As I recall further on, on page 9, we indicate that we will keep the Staff apprised of the progress, and provide the Staff with input similar with that which we provide to Walsh & Doyle. There was no intentional oversight of the Staff here.

We are very interested in having the Staff involved and knowledgeable in the process as it goes along so that we can expedite hearings on it when the process is finished. It would not be in our interest to preclude the Staff from seeing information until everything is finished, and then dumping it on them all at once. We recognize that.

MR. TREBY: We just wanted to clarify the statements on Page 3.

MR. REYNOLDS: Mr. Chairman, with regard to Ms. Ellis' comment about a so-called virgin line, I would like to hear a suggestion from her as to what line that

might be?

MS. ELLIS: I will be glad to check with Walsh & Doyle and give you that information. I personally don't know.

MR. REYNOLDS: We would like to hear from you on that.

MS. ELLIS: All right.

JUDGE BROCH: Okay. Before I call on Mr. Reynolds for any further rebuttal he has, the Board has gone over the plan with some care and would like to offer its own comments.

In particular, we went over the section from page 5 to 7. We noticed in No. 1, there is a reference to the written procedures, and we are concerned that we know how the procedures are actually implemented as well. In particular, we would like to know how the implementation of those procedures satisfies each of the criteria of Appendix B. We hope that the presentation will be clear enough to show that at the implementation of these procedures satisfies criteria for Appendix B.

No. 2, we would reference our design reconsideration decision just issued, Roman Number I F 4, specific stability question, concerning some of the questions still on the Board's mind about the process by which stability problems arise and the detail we would like to see in order

to understand fully whether or not this issue has important safety significance.

MR. REYNOLDS: 1 F 4?

JUDGE BROCH: Roman Number 1 F 4, entitled: Specific Stability Questions.

On No. 4, evidence that there are no adverse long term effect from U-bolts. We trust that the evidence will address the combined load question that Mr. Walsh and Mr. Doyle have raised, including the force from torqueing.

No. 6, there is a description of modifications of procedures. Any time a modification has been made in procedures, we are interested in knowing how Comanche Peak assures itself -- or the Applicant assures itself -- that the hardware was safe that was made prior to the modification of the procedure.

On No. 9, we would like to know how differences in generic and actual stiffness values effect compliance with Code criteria governing combined loads at individual supports.

On No. 12, we would hope that where Mr. Walsh and Mr. Doyle have given specific evidence, that the rebuttal evidence address specifically the evidence that is already in our record, and that we learn something about the time sequence. Show how the quality assurance program for design operated on documents -- to document the changes

that were made in these supports.

Back to No. 11, we would like to have the Chin and Doyle theories be specifically addressed by the Applicant in this response on Richmond inserts.

On 13, we would like to know why NPSI did not follow its own guidelines on flip joints, or why we were incorrect in believing that they didn't follow their own guidelines.

I am not sure whether you want to address these issues, but we would hope that in the direct testimony that was just filed by CASE on the SIGNA Report, a great deal was made about self-weight excitation. That is, the seismic consideration of the weight of the supports themselves, and also a great deal was made about the size of the bolt holes which you may be addressing in the flexibility problem or not. The evidence addresses the difference between bolted and friction connections, and questions whether increased damping effects are a full answer to increased seismic risks from large bolt holes.

You may want to address those two issues.

As a suggestion, we told you we are interested in the documentation of the implementation of the QA for design system. It is possible that the best way to assure us of that would be to have a portion of SIGNA's task be addressed to that.

On page 8, where SIGNA's work is outlined, we hope consideration will be given to having the check list that SIGNA uses include the concerns expressed by Mr. Walsh and Mr. Doyle in prefiled testimony, particularly in Mr. Doyle's testimony, at pages 7 through 8, and page 16, where there are two additional criteria.

On the first paragraph of the section on independent design review, the statement is that SIGNA will be requested to employ the same methodology as it has previously used. This does not address the Board's concern for a measure of observer reliability, which is of great concern to us, because we want to know when we are done how we know whether the independent reviewers reliably detected most, or all, of the design errors available.

Second, this does not accept the Board's suggestions concerning the degree of independence during the review period, and it anticipates the possibility, I think, of informal meetings that are not documented during that time period. The Board is concerned about whether that affects independence.

And third, we hope the Applicant intends to comply with our suggestions on clear presentation and full documentation.

And fourth, we hope that each of the conclusions will be independent, and independently explained and

evaluated, and will not rely on unanalyzed portions of Applicant studies.

I would particularly like to urge the use of tables, charts, and matrixes, because many of these issues involve large samples, and the ability to follow the sample to see the kind of errors that are detected, and what the outcomes are, can be greatly facilitated with a graphic presentation. Large masses of data are hard to analyze in written text alone.

There is a question that is raised by Mr. Walsh and Mr. Doyle that the Board will have to face, and we hope it will be covered either in briefs or testimony. This involves how you evaluate different error levels that may be found in an independent design review.

One way, which the SIGNA Report follows, is to try to test the safety significance of each of the errors. It is not clear to me what happens, though, about errors that happen not to have safety significance. If there are errors found, as we would expect in any design, there is some level of numbers of errors that make people uncomfortable about whether it was luck that there was no safety significance in this particular segment of a plant.

We will need assistance in knowing how to interpret the likelihood that non-costing errors, errors

with no safety significance, in one area of the plant might be indicative of other errors that have safety significance in other areas of the plant.

That is all that the Board has to say, and those comments were made for all the members of the Board after extensive discussion.

Mr. Reynolds?

MR. REYNOLDS: I have no specific responses to what the parties raised. You allowed me to comment as we went along, and I have no need for clarification on the points that you discussed that the Board has. And we do appreciate the prompt attention that was given to our request for response to our plan, and we will factor into our efforts the comments we have received.

JUDGE BROCH: We are hopeful that after all the evidence is pleaded, that this will be the end of the proceeding on design. At some point, as we pointed out in our reconsideration decision, repeated testimony that comes in is an undue burden on the parties, and due process is at stake. We have accorded, we think, a liberal right to the Applicant to continue sending evidence here, but our patience in that regard is not unlimited.

Are there any other necessary comments before we adjourn.

MS. ELLIS: Yes. Mr. Chairman, I have a couple of

things. One thing that probably should be addressed is the schedule which the Applicants have proposed at the bottom of page 8 of their Pleading.

Obviously, it is unrealistic to expect that all of this can be done in two months, and then we can have hearings as scheduled by the Applicant. Certainly, the initial SIGNA Report, which was less in scope, would have taken much longer, and in fact did take much longer than that. Obviously, the SIGNA Report, or whoever does this new independent design review, will take much longer than the Applicants have allowed for it.

JUDGE BROCH: May I comment on that. The Board was concerned about the time allotted. We have not, as you know, taken up the question of scheduling the hearing for that. We think it is too premature to do that.

We are hopeful that these reports will be very thorough, and that if the time schedule for the report becomes a problem for the reviewing organization, that that organization will have some flexibility to tell the Applicant that it can't meet the schedule, and that the quality of the work is more important than the schedule.

Mr. Reynolds, is that what you anticipate?

MR. REYNOLDS: We certainly don't want to impair the quality of the product by wishing for an unreasonable schedule.

JUDGE BROCH: In particularly, is there a firm deadline date in the contract, or will there be?

MR. REYNOLDS: There is a request that it be completed within sixty days. You have to understand, Mr. Chairman, that SIGNA does not have to start from ground zero. They are well up the learning curve with regard to Comanche Peak.

In general, there will need to be no procedures rewritten for this review, because they can utilize the procedures that they prepared for the first review.

JUDGE BROCH: I am not sure of that, because of the comment we made here about the check list that Mr. Walsh has suggested.

MR. REYNOLDS: That certainly doesn't require a month to write procedures, which the first review required.

JUDGE BROCH: Okay. I understand the reason you think you can do it within two months.

MR. REYNOLDS: Mr. Chairman, we recognize that, and we said that in there.

JUDGE BROCH: Ms. Ellis?

MS. ELLIS: Yes. Another thing we would like to get some information regarding if we had filed a request for documents for the upcoming hearing, and we would like to find out if we will be able to get those any

time soon.

JUDGE BROCH: Mr. Reynolds, how does that stand?

MR. REYNOLDS: Mr. Horin?

MR. HORIN: Ms. Ellis, we have provided your request for documents, and I will note just for the record in the Board's January 12th conference call it directed CASE to file immediately any request for documents with respect to SIGNA, and we didn't receive this until February 2nd, but not withstanding --

JUDGE BROCH: Wait. We directed an immediate filing, or we urged that they begin working on it immediately.

MR. HORIN: You directed that CASE commence discovery on SIGNA immediately.

JUDGE BROCH: Okay.

MS. ELLIS: We did the best we could.

JUDGE BROCH: Your answer is that you are going to provide the information.

MR. HORIN: My answer is that we have provided CASE's request to our people, and the request applied to documents that are held by both Applicants, SIGNA and Gibson held, and we are working on a schedule to attempt to provide as much as possible prior to the hearing.

JUDGE BROCH: And can it be done in phases so that you don't hold it all until the last minute.

MR. REYNOLDS: We intend to. As we get the documents together, to transport them to Dallas and allow CASE to come and pick those up.

MS. ELLIS: We would like to mention that we anticipate, since I will be in Ft. Worth for the next couple of weeks, that these will be picked up by either Mr. Walsh or one of the other CASE members, if that is satisfactory, and we will supply you with phone numbers and so forth.

MR. REYNOLDS: No problem.

MS. ELLIS: All right. And one further thing that I had not thought about previously until I was talking to some of our members this morning. It occurs to us that in the testimony of our new witness, which we have ready now to put in the mail this morning to the Board and parties, that there may be something which we have overlooked, and that is that in this testimony their contains specific references to documents and individuals, and that perhaps we should contact NRC, Region IV, and allow them sufficient opportunity to go out and investigate, at least in a limited fashion -- we realize the time constraits because of the hearings -- but perhaps Region IV should investigate, at least in a limited fashion, some of these things before Applicant is apprised of the specific document numbers and so forth. We will do whatever the Board desires in that regard.

We had not previously thought of that aspect of it.

JUDGE BLOCH: I think you must take that up with the Staff, which would have that as an independent area of responsibility.

MR. MIZUNO: Ms. Ellis, we haven't received, obviously, the testimony, but I fully expect as I got it to transfer it down to Region IV, and I suspect that they will be doing something.

However, as far as addressing the subject of the new witness at the hearing, unless it deals with SIGNA --

MS. ELLIS: It does deal with SIGNA.

JUDGE BLOCH: Yes. The witness is also to be deposed by the Applicant, and the witness apparently has allegations concerning the lack of independence of SIGNA.

MR. MIZUNO: Okay. That is fine. Since the Staff is not ready to go forward anyway, we wouldn't be expected to put on evidence about the witnesses allegations, obviously.

JUDGE BLOCH: That is a discussion that could be continued off the record.

MR. REYNOLDS: Just to clarify, did I hear Mr. Mizuno say that the Staff is not prepared to proceed on the SIGNA Report?

MR. MIZUNO: The Staff is not prepared to present

its own direct case on the SIGNA Report. However, it is prepared to cross examine the Applicant witnesses, and after reading the testimony of CASE's latest witness, I assume that we will be prepared to do some cross examination, although we will possibly have to reserve an opportunity for further cross examination based upon our Region IV people having an adequate time to read it.

MR. REYNOLDS: I understand. Thank you.

JUDGE BLOCH: Mr. Mizuno, I am curious on a procedural point. Whether the Staff should have notified the Board on the date for the filing of testimony concerning the reasons it wasn't going to be ready. It wouldn't have been a very extensive filing, but shouldn't we have received that?

MR. MIZUNO: I thought it was clear that the Staff was going to be preparing -- going forward on the SIGNA Report. I think we said the Staff's supplemental SDR, which would set forth the Staff's conclusions, evaluations and conclusions on the SIGNA Report, wasn't going to be ready until the beginning of March or the end of February, and it was clear, I believe, to all the parties, and --

JUDGE BLOCH: Okay. My recollection was otherwise, but I accept your correction.

MR. MIZUNO: We will in the future, if we have

any similar inability to go forward, we will definitely file a letter stating that the Staff will or will not be going forward on various subjects as the Board sets forth subjects for hearing.

JUDGE BLOCH: Mr. Reynolds, I am curious. It was my recollection that the Staff hopes to be able to present direct testimony. Was that yours also?

MR. REYNOLDS: Sir, I really can't recall. I will accept Mr. Mizuno's representation.

JUDGE BLOCH: Ms. Ellis, have you more for us?

MS. ELLIS: That is the primary thing. I would like to discuss this further off the record.

JUDGE BLOCH: Okay. I would like to state that on Sunday evening I was called at home by Ms. Ellis and asked by her whether we were anxious to receive the testimony elicited by Brown & Ruth from Mr. Dunham in the related Labor Department proceeding, and at that time I said that that was a matter of strategy for Ms. Ellis, and we were not going to participate in that.

I subsequently expressed my concern to Ms. Ellis that that was not a proper matter to be raising with the Board. That there was no reason for us to be advising her with respect to litigation strategy, and I do want those discussions to be reflected on our record.

MR. REYNOLDS: I trust that won't recur.

MS. ELLIS: Judge, I think it should be noted our primary concern was whether or not the Board considered it as a sort of new and significant information which should be supplied by the Applicant, since Brown & Ruth had taken the deposition.

JUDGE BLOCH: But even a motion of that sort should have been made in writing, and that would have allowed Applicants to respond. The Board did express its opinion, now that you refresh my memory.

We expressed our opinion that that was not the sort of information that we thought was required to be filed as new information because it was not a safety matter affecting the plant. It involves another proceeding, and a matter of proof that would be contested subsequently. I did not think that was the kind of matter that the Applicant was obligated to file.

There being no further business --

MR. REYNOLDS: Mr. Chairman, may I state for the record that I find it entirely inappropriate that the Intervenor in this case would be calling the Chairman at home on a Sunday night to talk about litigation strategy. It troubles me greatly that Ms. Ellis would so violate the Ex Parte rule. I think that while I appreciate your clarification on the record, it certainly doesn't forgive such a gross violation of the Ex Parte rules.

JUDGE BLOCH: And we also have cautioned Ms. Ellis to that effect.

MS. ELLIS: I will have to check my records, too, but it is not my recollection that it was a Sunday evening. I may be incorrect there. I believe the reason I had called when I did was that I had just read the information, having just received it, and I believe it was -- I don't recall now, but I will have to check my records.

JUDGE BLOCH: It is possible it was Monday evening. I know I was sitting by my computer at home at the time.

MS. ELLIS: I had anticipated that I would not be in town the next day, and I did not want to miss getting the information to the Board if the Board felt --

JUDGE BLOCH: I don't think the placing of the call is really what is crucial. The important thing is that it was a matter that really should not be raised with the Board orally, and out of the hearing of other parties.

MS. ELLIS: Yes. I understand.

JUDGE BLOCH: There being no further business --

MS. ELLIS: There is one further. I had mentioned I would like to discuss further the matter of the testimony.

JUDGE BLOCH: Which testimony?

MS. ELLIS: The testimony of our new witness.

JUDGE BLOCH: This is testimony that you filed for a hearing. Why do we need to discuss it now?

MS. ELLIS: We have not filed it yet. What I was wanting to know, if the Board would -- if the Board wants us to go ahead and get the information in the mail today, we will.

JUDGE BLOCH: This is the back-up information. Yes. You called me about that this morning.

MS. ELLIS: This is the testimony of the new witness, which contains the --

JUDGE BLOCH: The rule is you have to get things in as quickly as possible when you have new information, and obviously you haven't got all the information in yet. You have to file it, and disclose why you weren't able to have it earlier.

MS. ELLIS: All right. We will go ahead and get it into the mail to you today, and I will get in touch with Region IV and let them do what they can.

MR. REYNOLDS: Over night delivery?

MS. ELLIS: Certainly.

MR. REYNOLDS: And would you over night it to Mr. Gary as well?

MS. ELLIS: I assume being here in Dallas he will get it tomorrow.

MR. REYNOLDS: Well, I would like to be assured, since it is late filed, that he gets it. You had a call this morning from Ms. Ellis?

JUDGE BLOCH: This morning's call just stated that there was a filing I would receive, I hope today, about the allegations from this new witness, and that some material was not included that would be filed later.

MR. REYNOLDS: I question the necessity for such a call. Why couldn't they just be filed and a statement put in there that subsequent information would be forthcoming.

JUDGE BLOCH: Ms. Ellis?

MS. ELLIS: The initial purpose of the call was to clarify the extent of the scope of this morning's conference call, and I asked specifically about that first. I mentioned that I would be telling the parties that we would have information coming forward, and we would just be discussing in the conference call this morning our new witness' testimony, which we have done.

JUDGE BLOCH: I think I have a procedural change that I would like to take. Calls to the Board should certainly be very rare. I would like to request that any time a party is going to call the Board, that it first call at least one other party and inform them of the reason for doing that before it calls the Board.

MR. REYNOLDS: I think that is a good procedural

change, Mr. Chairman.

JUDGE BLOCH: There being no further business, the hearing is adjourned. Parties wishing to order transcripts may stay on the line.

(Whereupon, the telephone conference call concluded at 11:48 a.m., this same day.)

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the

NRC COMMISSION

In the matter of: Telephone Conference Call.

Date of Proceeding: February 10, 1984

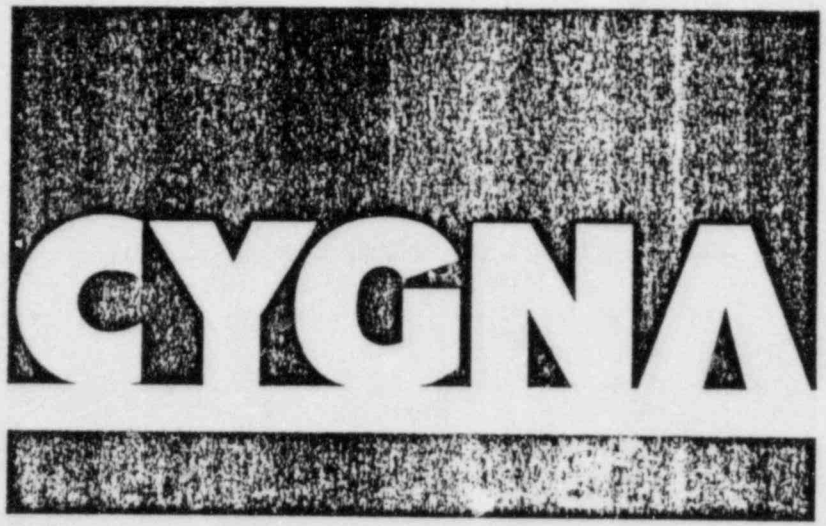
Place of Proceeding: Bethesda, Maryland

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

Garrett J. Walsh, Jr.
Official Reporter - Typed

Garrett J. Walsh Jr.
Official Reporter - Signature


CYGNA


CYGNA

Texas Utilities Generating Co.

Independent Assessment Program

Comanche Peak Steam Electric Station

December 20, 1984

Agenda

I. Independent Assessment Program Scope and Objectives

II. Walsh/Doyle Allegations

I. SCOPE AND OBJECTIVES

- Phases 1 and 2
- Phase 3
- Phase 4
- Summary - all phases

Independent Assessment Program
(Phases 1 and 2)

Purpose

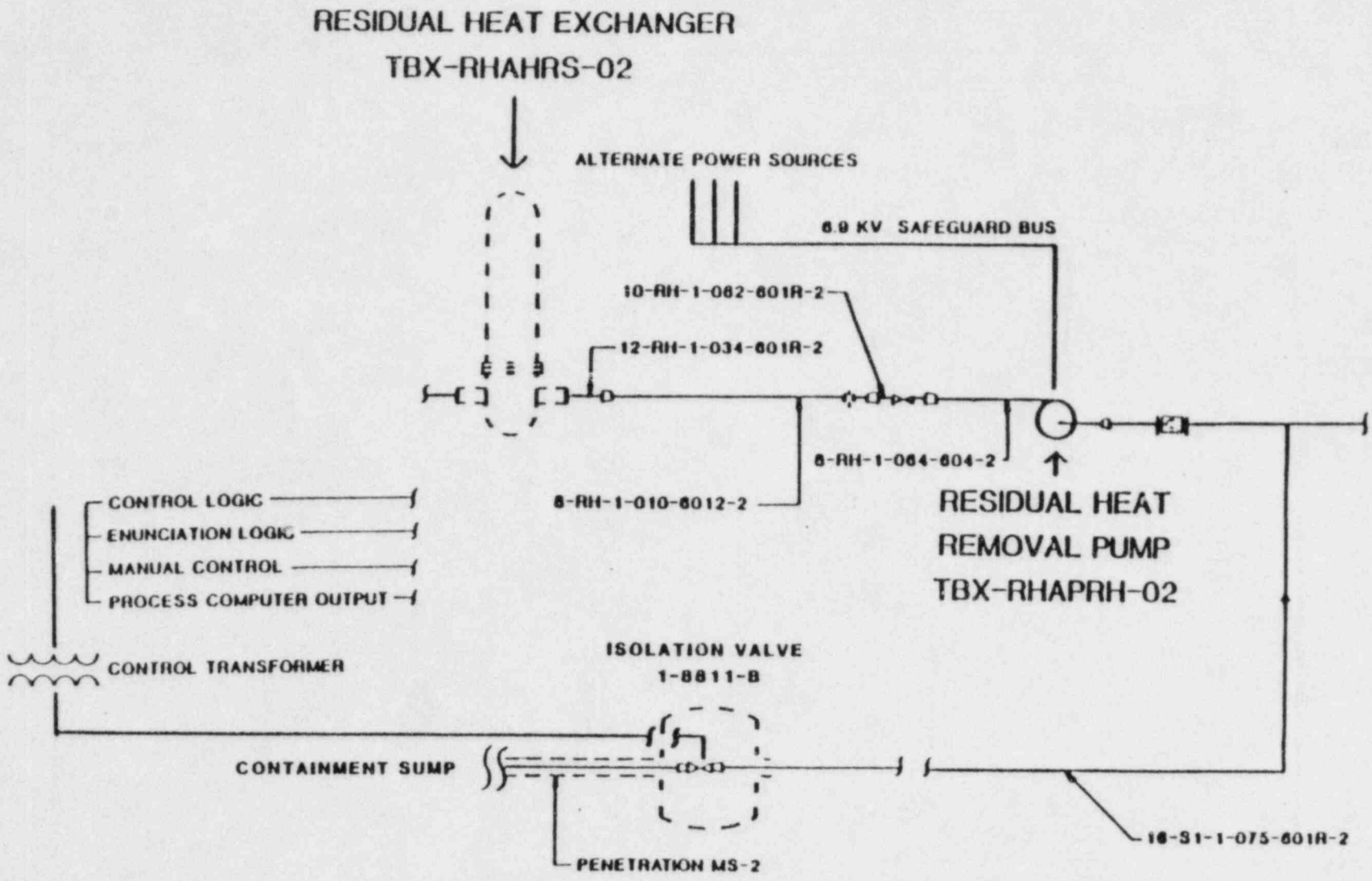
- Provide supplementary evidence and additional assurance regarding the overall design quality of the Comanche Peak Steam Electric Station (CPSES).
- Address the concerns and comments expressed by the NRC in letters to Texas Utilities dated May 4 and July 15, 1983, including supplement.
- Satisfy the commitments made at the August 18, 1983 NRC meeting regarding content of the program plan, which was subsequently approved by the NRC.

Independent Assessment Program (Phases I and 2)

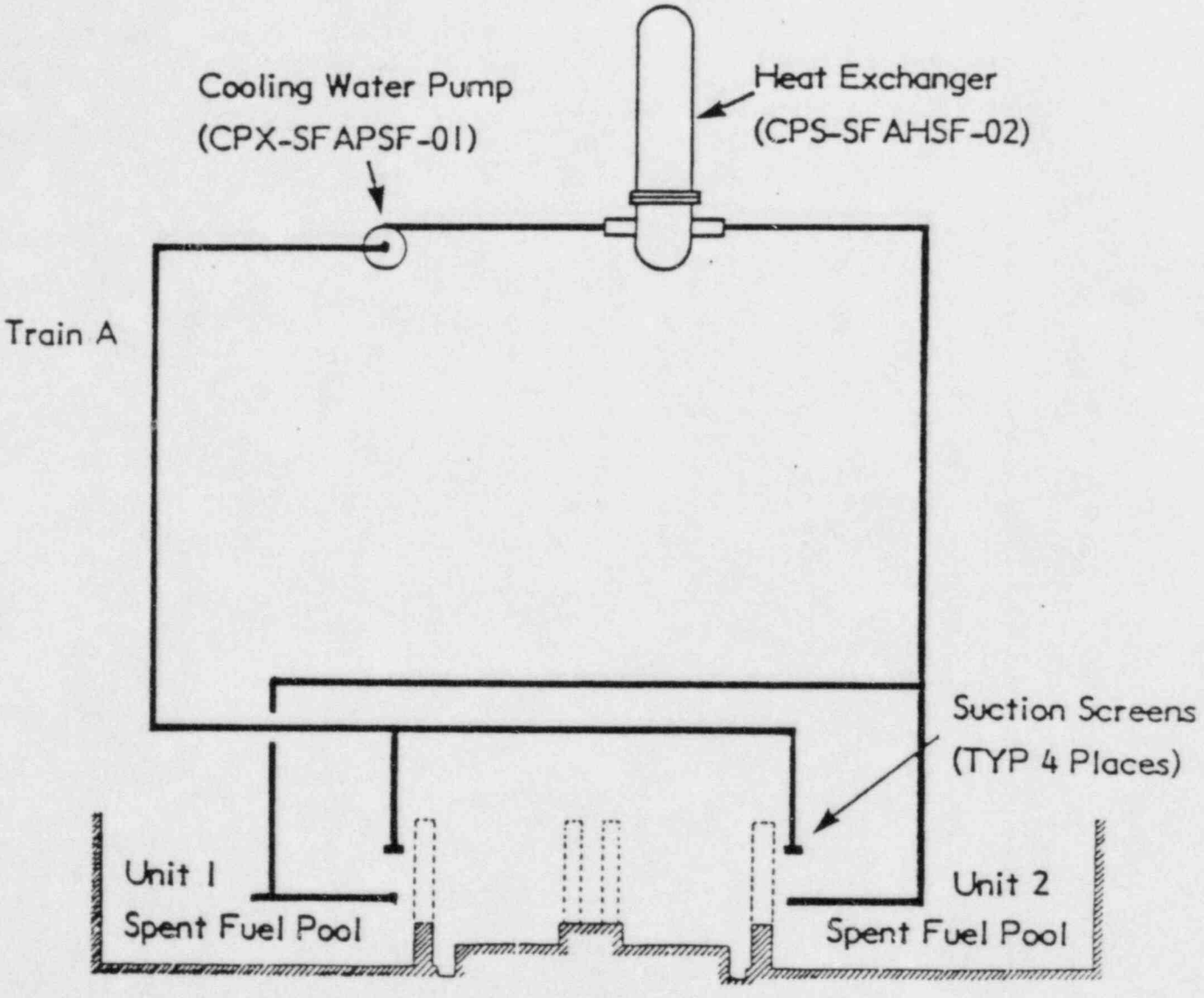
Program Objectives

- Provide an assessment of the adequacy of the design control program.
- Provide an assessment of the design adequacy of a selected system.
- Verify a selected as-built configuration.
- Evaluate the extent of implementation of selected design control program elements.

RHR Train "B" Element



Spent Fuel Pool Cooling Element



Implementation Evaluations
(Phases 1 and 2)

RHR/Safety Injection System - Train B

- Design
  - Review of pipe stress/flued head analysis
  - Review of pipe support design
  - Review of cable tray support structural design
  - Review electrical power supply
  - Review instrumentation and controls
  - Review seismic equipment qualification
- Design Analysis Control

Spent Fuel Pool Cooling System - Train A

- Perform As-Built Walkdown
  - Structural
  - Pipe Supports
  - Piping Layout
  - Electrical
- Internal/External Interface Control
- Design Change Control

Design Control Program Review
(Phases 1 and 2)

- Texas Utilities
- Gibbs & Hill

Independent Assessment Program (Phase 3)

Purpose

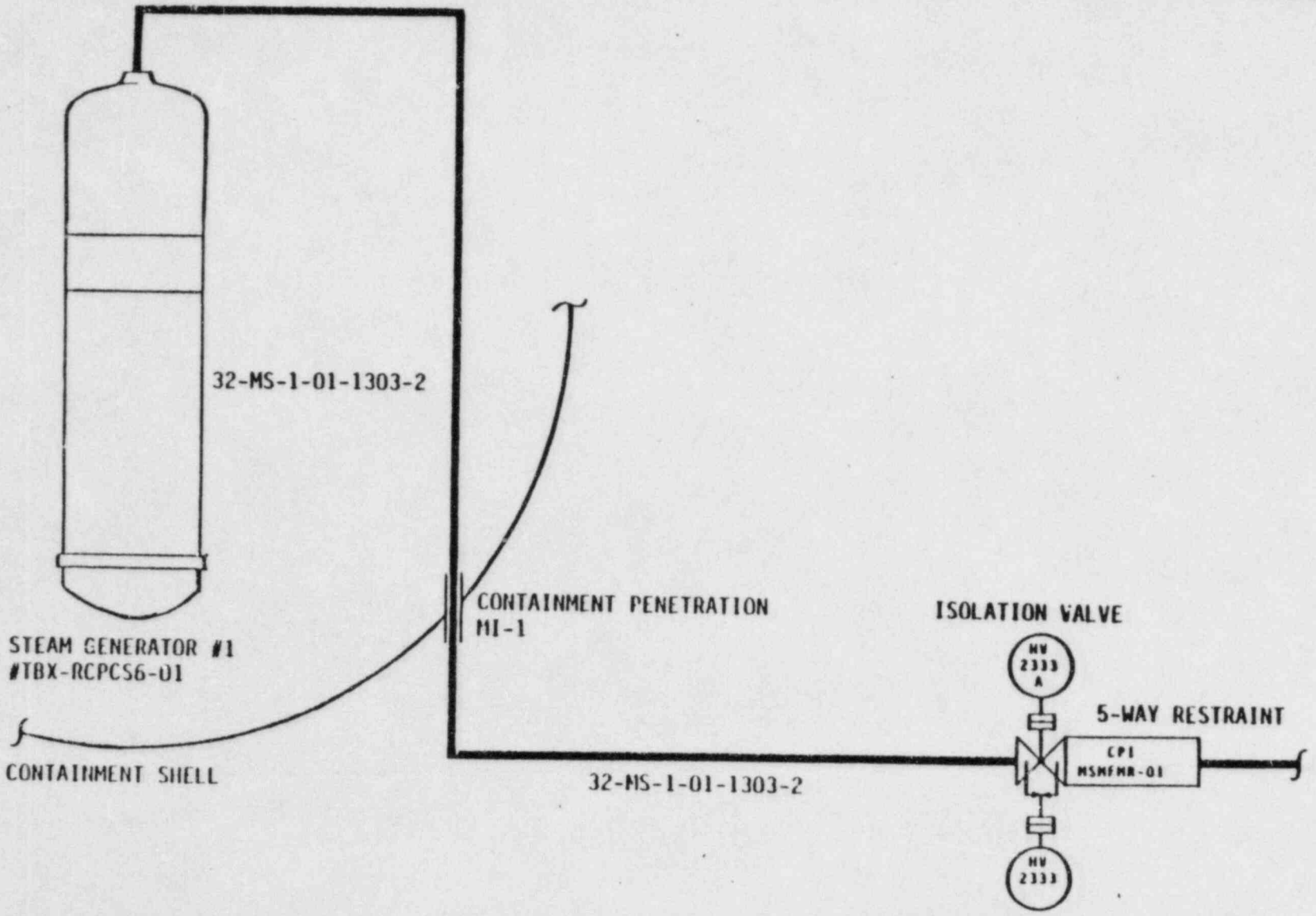
- Perform an independent review of a system which was selected on the basis that it exhibited design characteristics similar to the concerns raised during the CPSES ALSB proceedings.
- Address concerns the ASLB had with certain portions of the CPSES design control program.

Independent Assessment Program (Phase 3)

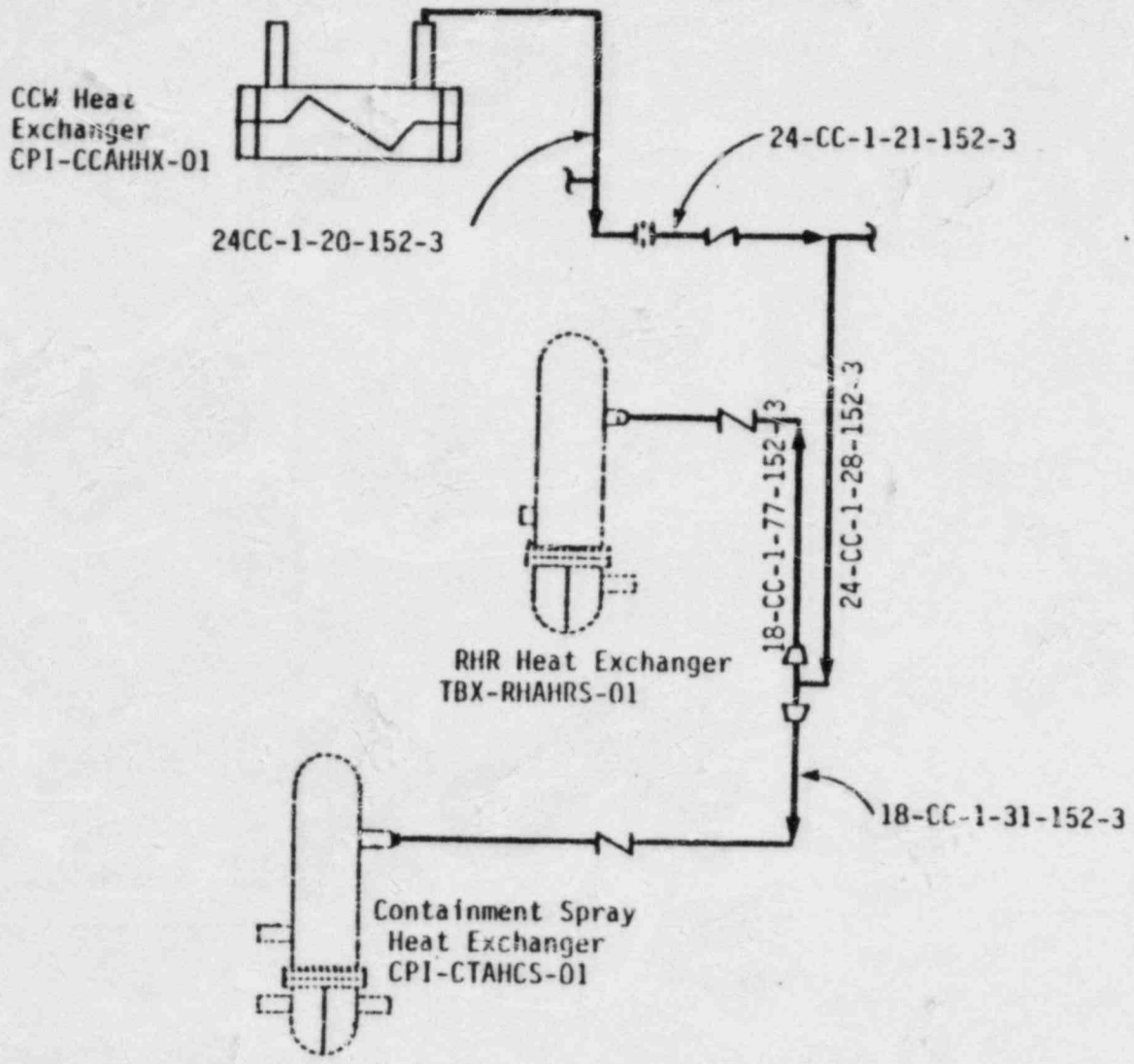
Program Objectives

- Assess the adequacy of the piping and pipe support design in portions of the Component Cooling Water System (CCWS) and the Main Steam System.
- Assess the adequacy of Texas Utilities, Gibbs & Hill, NPSI, and ITT Grinnell organization (Criterion I) and corrective action program (Criterion XVI) as they pertain to design.
- Verify the adequacy of the implementation of Criteria I and XVI at Texas Utilities, Gibbs & Hill, NPSI and ITT Grinnell.

Main Steam Element



Component Cooling Water Element



Implementation Evaluations
(Phase 3)

CCW and Main Steam Systems

- Design
  - Review of pipe stress analysis
  - Review of pipe support design
- Design control
  - Organization (Criteria I)
  - Corrective action (Criteria XVI)

Program Reviews (Criterion I and XVI) (Phase 3)

- TUGCO
- Gibbs & Hill
- NPSI
- ITT Grinnell

Independent Assessment Program (Phase 4)

Purpose

- Perform an independent, multi-discipline review of a system.
- Address additional concerns the ASLB had with certain portions of the CPSES design control program.

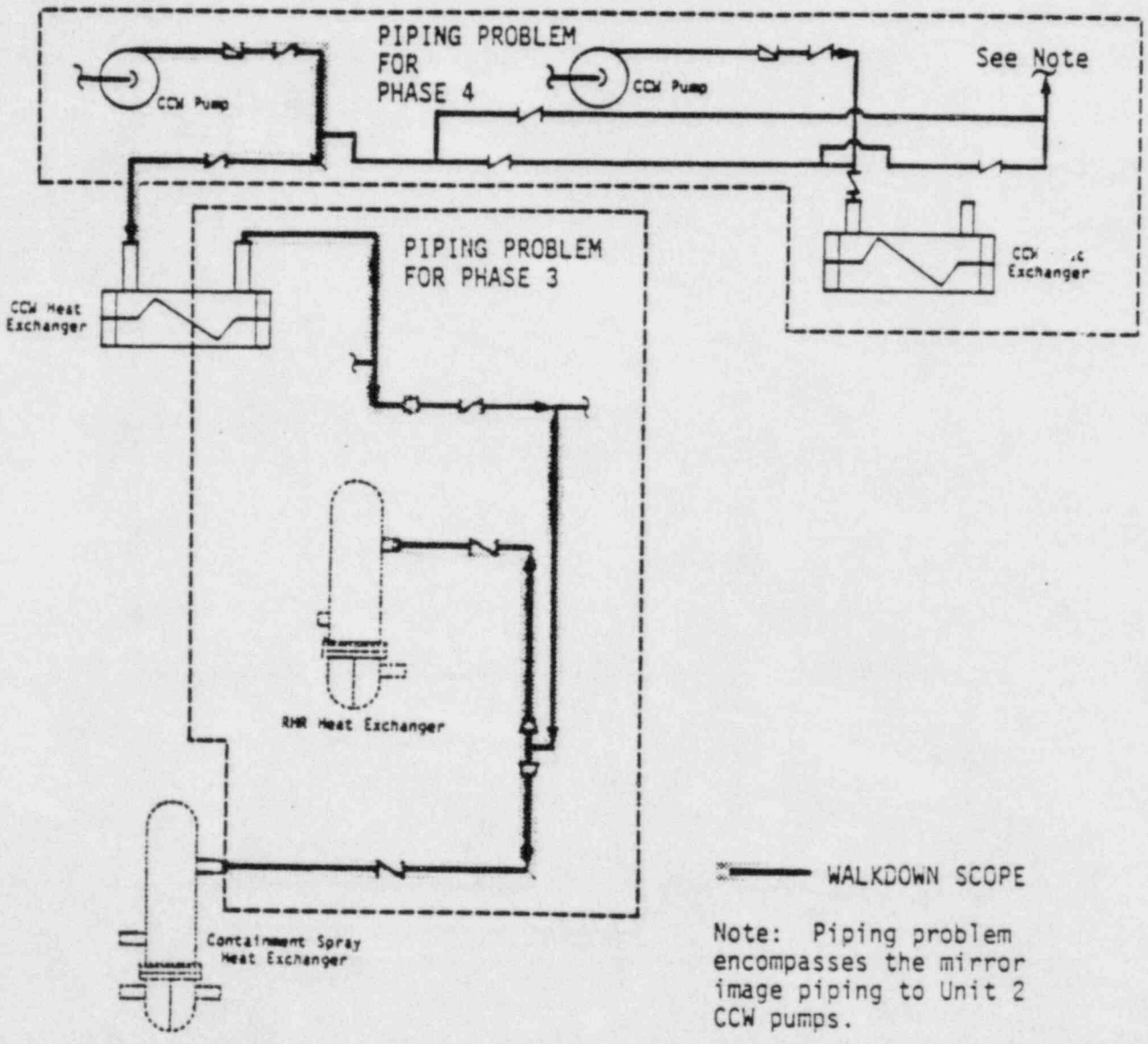
Independent Assessment Program (Phase 4)

Program Objective

- Multi-discipline technical review of selected portions of the design of the Component Cooling Water System (CCWS).
- As-built verification of selected portions of the CCWS and Main Steam systems.
- Evaluation of the implementation of two additional elements of the design control program at Texas Utilities and Gibbs & Hill. Specifically, the Design Input Control and Design Verification Control Elements.

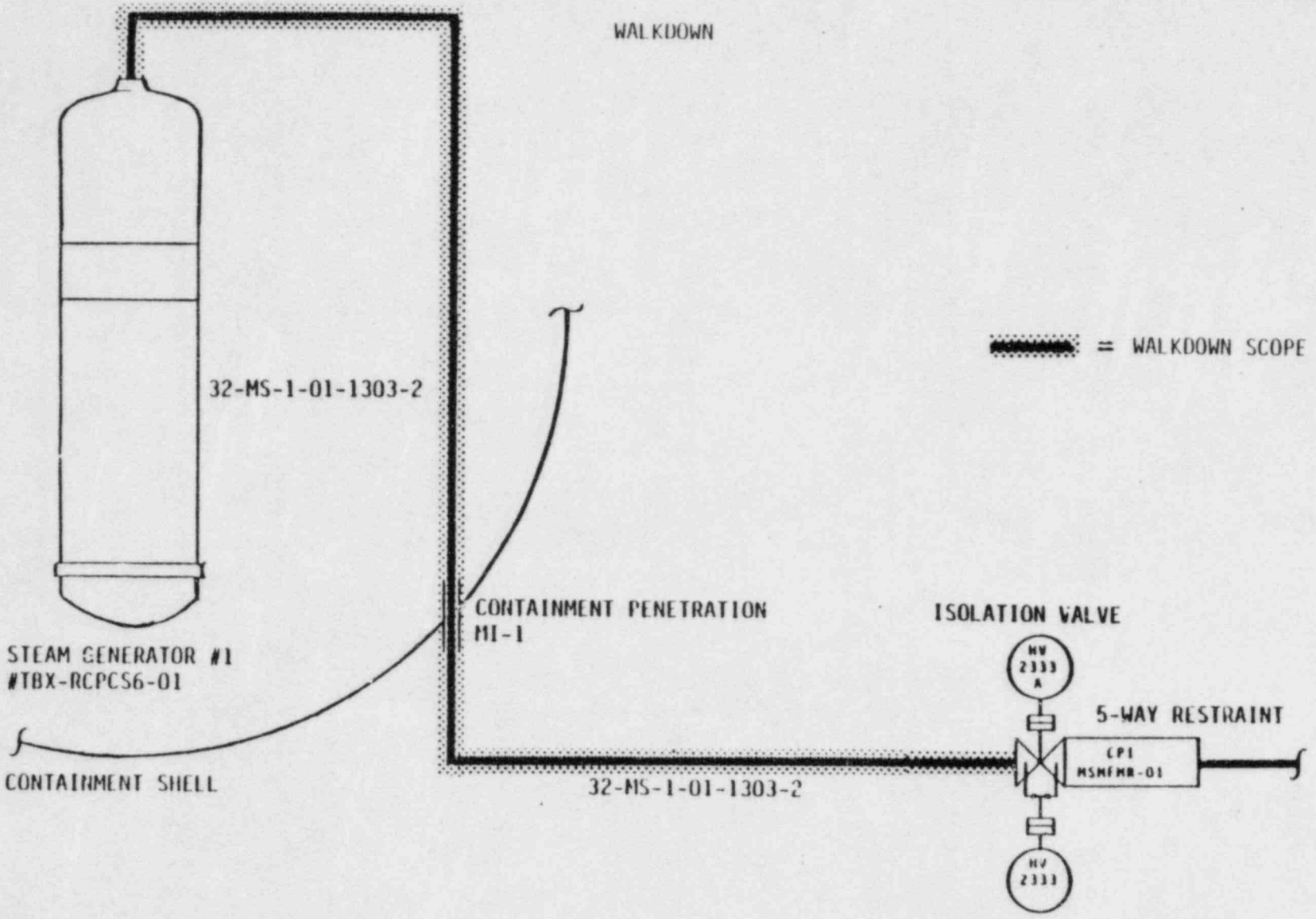
Component Cooling Water Element

Piping and Walkdown



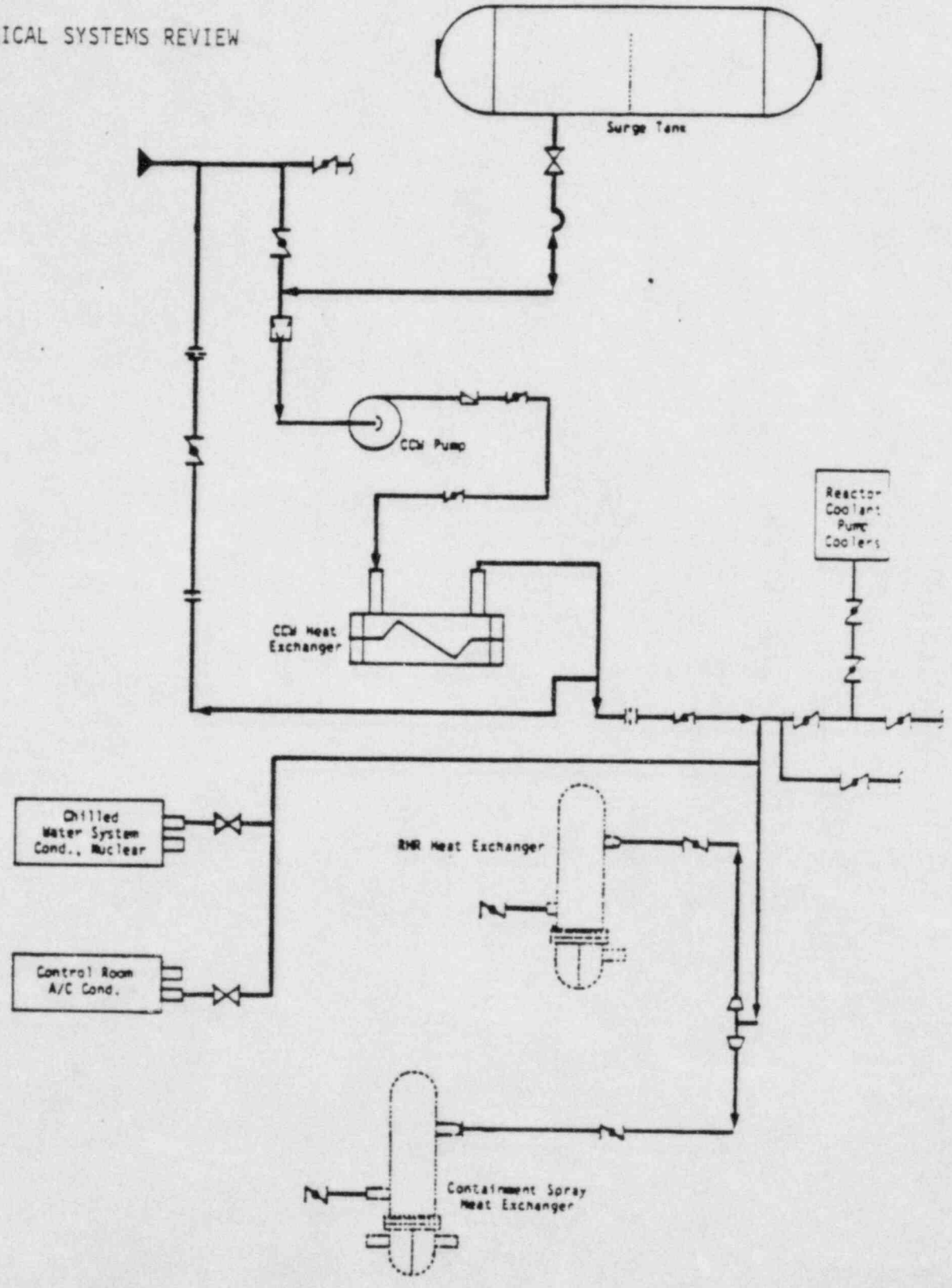
Note: Piping problem encompasses the mirror image piping to Unit 2 CCW pumps.

Main Steam Element



Component Cooling Water Element

MECHANICAL SYSTEMS REVIEW



Implementation Evaluations
(Phase 4)

Component Cooling Water System

- Design
  - Review of pipe stress analysis
  - Review of pipe support design
  - Mechanical system review
  - Electrical/I&C review
  - Cable tray/conduit support design
  - As-built walkdown

- Design control
  - Design input control
  - Design verification control

Main Steam System

- Design
  - As-built walkdown

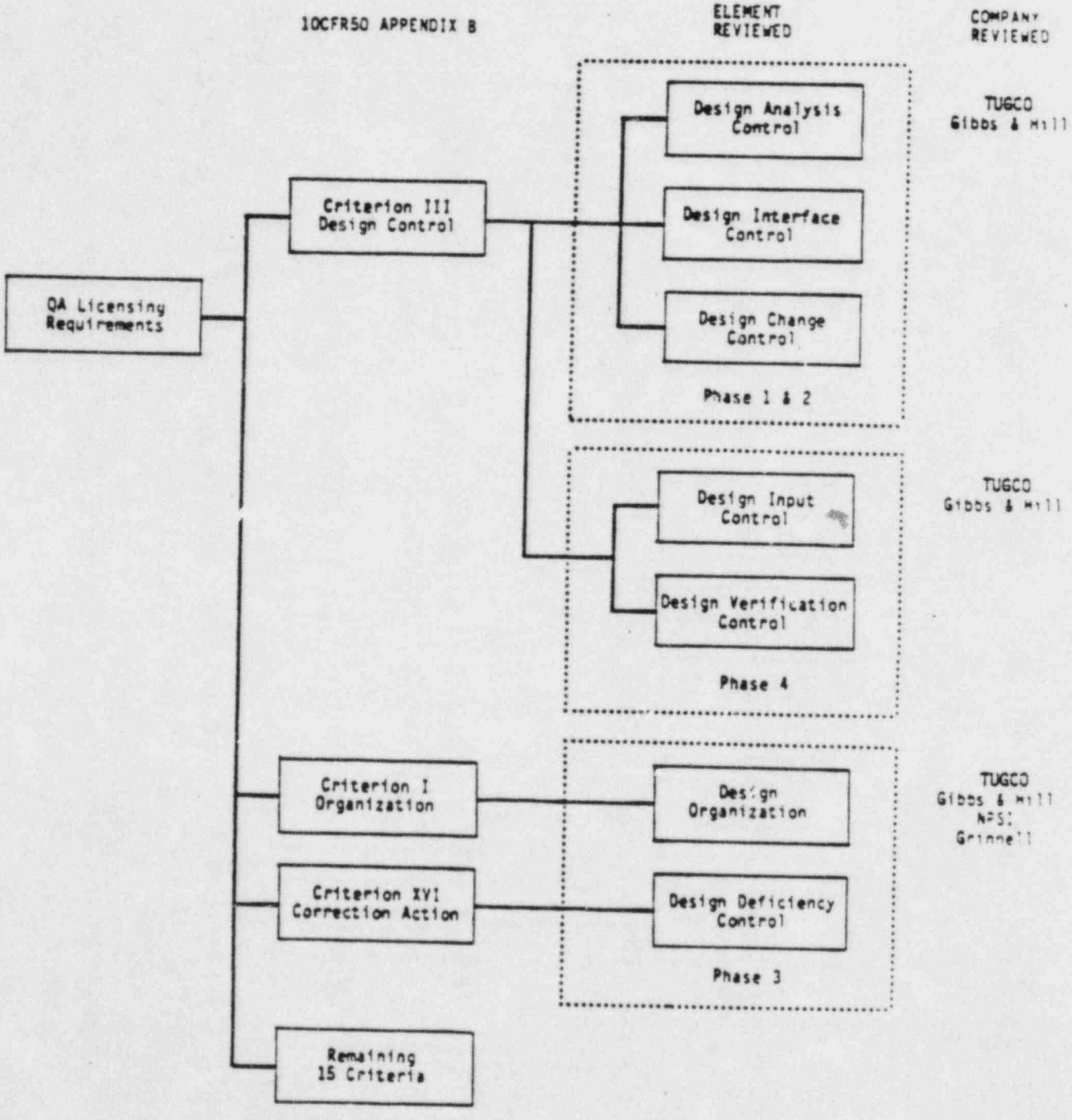
- Design control
  - Design input control
  - Design verification control

Independent Assessment Program (All Phases)

Scope Summary

- A multi-disciplined technical review of a portion of one train of the CCWS, and a portion of the RHR system.
- As-built verification of a portion of one train of the CCWS, portions of the Main Steam system and a portion of the Spent Fuel Pool Cooling System.
- Review of the piping and pipe support designs in portions of the Main Steam and CCWS Systems.
- Complete design control program evaluations of TUSI and Gibbs & Hill.
- Implementation evaluations of the design control program in terms of five selected design control elements.
- Program and implementation evaluation of the organization and corrective action system as they pertain to design.

Design Control
Total Review Scope



CPSES Implementation Review Matrix

Element	CAT	SIT	Independent Phases 1&2	Assessment Phase 3	Program Phase 4
Program Requirements (Organizational)	*			X	
Design Input		*	*		X
Design Process					
Design Analysis		*	X		*
Drawing Control	X	*	*		
Interface Control (Internal/External)		*	X	*	
Design Verification		*	*		X
Document Control	X	*	*		
Design Change Control	X	*	X		
Corrective Action	X	*	*	X	
Records	*	*	*	*	*
Audits	X		*	*	
Design		X	X	X	X
As-Builts	X	*	X		X

X = Full Review
* = Not a Detailed Review

II. Walsh/Doyle Allegations

- List of allegations
- Definitions
- Cygna review of allegations
- Summary

Walsh/Doyle Allegations

Allegation

- Overstressed clip angle due to U-bolt cinching force.
- Thermal lockup of anchors.
- Box frames with 0" gap.
- Oversize bolt holes and the distribution of bolt forces.
- Allowables for A500 tube steel.
- Undersize welds and errors in weld calculations.
- Richmond insert allowables and bending stresses.
- Consideration of frictional loads on pipe support design.
- Conflicting section properties taken from different editions of the AISC manual.
- Cable tray damping values.
- Local stress effects.

Allegation

- U-bolts intended as one way restraints but acting as two-way restraints
- Corrective Action Program
- Differential Seismic displacement for beams which span floor to ceiling on wall to wall.
- Modelling beam member as torsionally rigid.
- Skewed weld.
- Design Organization Interfaces.
- Inclusion of dead weight in pipe support design.
- Local pipe stresses due to line contact between the pipe and the support.
- Modelling axial rotational restraints in the stress analysis.
- Acceptability of 5^{o} installation tolerance for struts and snubbers.

Allegation

- Calculation of pipe support stiffness without consideration of base plate flexibility.
- Cinching of U-bolts.
  a. Unpredictable material relaxation characteristics of A-36 steel.
  b. Stresses of unknown quantity.
  c. Effects of local pipe stresses.
  d. Manufacturers intended application.
- Pipe Support Stability.
- Sizing of pipe support hardware for rotational restraints.
- Punching effects in tube steel around bolt holes.
- Cummulative effects of individually insignificant descrepancies.
- Corrective action program.
- Design Verification.

Walsh/Doyle Allegations (Continued)

Allegation

- Dynamic Amplification Factor for cable tray and conduit support design.
- Governing load case and its effect on allowable stresses for cable tray support design.

Allegation

- Inclusion of pipe support mass in stress analysis.
- Pipe support self-weight excitation.
- Pipe Support Stiffness used in stress analyses.

Allegation

- Accuracy of as-built drawings.

Basis for Walsh/Doyle List

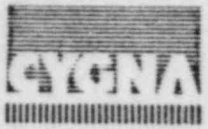
Cygna has developed a list of Walsh/Doyle allegations based on review of:

1. ASLB Memorandum and Order (Quality Assurance for Design), dated December 28, 1983.

2. Special inspection team (SIT) report relating to Walsh/Doyle allegations, NRC inspection report 50-445/82-26 and 82-14, February 1983.

3. D. Wade (TUGCO) memorandum to N. Williams (Cygna), "Scope Extension to Cygna Independent Design Review," received by Cygna via telecopy on February 3, 1984.

4. CPSES ASLB hearing transcripts which contain testimony by Cygna witnesses.



Definition

Category I

Walsh/Doyle allegations which Cygna considers closed based on Cygna evaluations.

CYGNA

Definition

Category 2

Walsh/Doyle allegations reviewed and closed based on industry experience and engineering judgement. Cygna evaluation has not been to the level of justifying engineering judgment and engineering practice as requested by the ASLB.

Definition

Category 3

Open items requiring TUGCO response to Cygna

or

open items still under review by Cygna.

Definition

Category 4

Walsh/Doyle allegations which remain open for reasons other than those covered by the definition of Category 3. Specific reasons to be provided.

Category I Walsh/Doyle Allegations

	Allegation	Cygna Cross-Reference
1.	Overstressed clip angle due to U-bolt cinching force.	TUGCO 4/19/84 response to Cygna questions.
2.	Thermal lockup of anchors.	Prefiled Testimony of Nancy H. Williams dated April 12, 1984. Doyle question 15.
		IAP, Phases 1 and 2 Final Report, TR-83090-01, Rev. 0. Pipe Support Checklist General Note 4.
3.	Box frames with 0" gap.	Prefiled Testimony of Nancy H. Williams dated April 12, 1984. Doyle question 15.
		IAP, Phases 1 and 2 Final Report, TR-83090-01, Rev. 0. Pipe Support Checklist General Note 4.
		IAP, Phase 3 Final Report, TR-84042-01, Rev. 1.

Category I
Walsh/Doyle Allegations (Continued)

	Allegation	Cygna Cross-Reference
4.	Oversize bolt holes and the distribution of bolt forces.	Prefiled Testimony of Nancy H. Williams dated April 12, 1984. Doyle question 16. IAP, Phases 1 and 2 Final Report, TR-83090-01, Rev. 0. Pipe Support Checklist General Note 5. IAP Phase 3 Final Report, TR-84042-01, Rev. 1, Pipe Support Checklist General Note 15.
5.	Allowables for A500 tube steel.	Prefiled Testimony of Nancy H. Williams dated April 12, 1984.
6.	Undersize welds and errors in weld calculatio..	IAP, Phase 3 Final Report, TR-84042-01, Rev. 1. Observations PS-04, PS-05, PS-06 and PS-07.

Category I
Walsh/Doyle Allegations (Continued)

	Allegation	Cygna Cross-Reference
7.	Richmond insert allowables and bending stresses.	IAP, Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support Checklist General Note 6.
8.	Consideration of frictional loads on pipe support design.	IAP, Phase 3 Final Report, TR-84042-01, Rev. 1. Observation PS-08.
9.	Conflicting section properties taken from different editions of the AISC manual.	IAP, Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support General Note 9.
10.	Cable tray damping values.	Prefiled Testimony of Nancy H. Willians dated April 12, 1984. Walsh question 5. IAP, Phase 4 review.
11.	Local stress effects.	IAP, Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support Checklist General Note 3. Prefiled Testimony of Nancy H. Williams dated April 12, 1984. Doyle Question 2.

Category I
Walsh/Doyle Allegations (Continued)

	Allegation	Cygna Cross-Reference
12.	U-bolts intended as one way restraints but acting as two-way restraints	IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support Review Criteria and Checklists.
13.	Corrective Action Program	IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Design control matrices and checklists.
14.	Differential Seismic displacement for beams which span floor to ceiling or wall to wall.	IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Checklists for Supports: CC-I-009-016-A43A (PS-08) CC-I-028-720-S33R (PS-39) CC-I-028-721-S33R (PS-40)

Category I
Walsh/Doyle Allegations (Continued)

	Allegation	Cygna Cross-Reference
15.	Modelling beam member as torsionally rigid.	IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support Checklists.
16.	Skewed weld.	Prefiled Testimony of Nancy H. Williams dated April 12, 1984. Doyle Question 9.
17.	Design Organization Interfaces.	IAP Phases 1 and 2 Final Report, TR-83090-01, Rev. 0. Design Control Review Checklists. IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Design Control Review Results.

Category 2 Walsh/Dolye Allegations

Allegation	Cygna Cross-Reference
1. Inclusion of dead weight in pipe support design.	IAP Phase 1 and 2 Final Report, TR-83090-01, Rev. 0. Pipe Support Checklist General Note 3. IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support Checklist General Note 1.
2. Local pipe stresses due to line contact between the pipe and the support.	Cygna internal documentation only.
3. Modelling axial rotational restraints in the stress analysis.	IAP Phase 1 and 2 Final Report TR-83090-01, Rev. 0. Pipe Stress Checklist General Note 2.
4. Acceptability of 5^{o} installation tolerance for struts and snubbers.	CPSES ASLB TR. 12645 and 12651.
5. Calculation of pipe support stiffness without consideration of base plate flexibility.	Prefiled testimony of Nancy H. Williams dated April 12, 1984. Doyle Question 14.

Category 3 Walsh/Dolye Allegations

Allegation	Cygna Cross-Reference
1. Cinching of U-bolts. a. Unpredictable material relaxation characteristics of A-36 steel. b. Stresses of unknown quantity. c. Effects of local pipe stresses. d. Manufacturers intended application.	IAP Phases 1 and 2 Final Report, TR-83090-01, Rev. 0. Pipe Support Checklist General Note 1.
2. Pipe Support Stability.	IAP Phases 1 and 2 Final Report TR-83090-01, Rev. 0. Pipe Support Checklist General Note 1. IAP Phase 3 Final Report TR-84042-01, Rev. 1. Pipe Support Checklist General Notes 10, 12 and 16.
3. Sizing of pipe support hardware for rotational restraints.	IAP, Phase 3 Final Report, TR-84042-01, Rev. 1.

Category 3
Walsh/Dolye Allegations (Continued)

	Allegation	Cygna Cross-Reference
4.	Punching effects in tube steel around bolt holes.	IAP Phase 4 review.
5.	Cummulative effects of individually insignificant descrepancies.	IAP, Phases 1 and 2 Final Report, TR-83090-01, Rev. 0, "Methodology." IAP, Phase 3 Final Report, TR-84042-01, Rev. 1, "Methodology."
6.	Corrective action program.	IAP Phases 3 and 4 technical reviews.
7.	Design Verification.	IAP Phase 4 review scope.
8.	Dynamic Amplification Factor for cable tray and conduit support design.	IAP Phase 4 review scope.
9.	Governing load case and its effect on allowable stresses for cable tray support design.	IAP Phase 4 review scope.
10.	Accuracy of as-built drawings.	IAP Phase 4 review scope.

Category 4 Walsh/Doyle Allegations

Allegation	Cygna Cross-Reference
1. Inclusion of pipe support mass in stress analysis.	IAP Phases 1 and 2 Final Report, TR-83090-01, Rev. 0.
2. Pipe support self-weight excitation.	IAP Phase 1 and 2 Final Report, TR-83090-01, Rev. 0. General notes attached to individual pipe support checklists. IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support Checklists General Note 7. Meeting transcript between NRC and Cygna, July 3, 1984.
3. Pipe Support Stiffness used in stress analyses.	IAP Phases 1 and 2 Final Report TR-83090-01, Rev. 0. General notes attached to individual pipe support checklists. IAP Phase 3 Final Report, TR-84042-01, Rev. 1. Pipe Support Checklist General Note 8. Meeting transcript between NRC and Cygna, July 3, 1984.

Summary

Category 1	=	17	
Category 2	=	5	
Category 3	=	10	
Category 4	=	3	
Total	=	35	Allegations

BACKUP

GENERAL NOTES TO PIPE SUPPORT CHECKLISTS

1. Component Weights

As a matter of standard practice, the pipe support design organizations do not include standard component weights (i.e., strut, spring, snubber, clamp) as part of the pipe support design load. They normally consider the weight of the frame members when using the STRUDL program for design, however, they neglect the standard component effect. Since these components weights are typically small in comparison to the applied pipe load (5% or less), they will have little impact on design, even in the case of the weight being orthogonal to the applied load. In addition, it is common practice to neglect these weights for struts, snubbers, and rods. Cygna has seen examples in industry where the weight of large constant supports is included in the design of the wall or ceiling attachments but these are typically no more than 5% of the pipe load and can be considered negligible. Therefore, Cygna finds this procedure acceptable.

2. Pad/Trunnion Stresses on the Main Steam Line

In the pipe support calculations involving pads or trunnions welded to the Main Steam piping, Cygna did not find many examples of stress checks. Instead, the drawings carried the note "Pad (or trunnion) qualified per Appendix G of ASME B&PV Code." Per TUGCO document CPP 12978, attachments welded to the Main Steam and Feedwater lines require impact testing (per Subsection NC-2311 of the ASME B&PV Code) or assurance that the stress levels are low enough to preclude non-ductile failure. In order to qualify pads or trunnions already assembled, NPSI (Secaucus) performed detailed finite element analyses of each geometry and compared the maximum stresses to allowables derived from Appendix G (Prevention Against Non-Ductile Failure), which resulted in stresses much lower than standard Code allowables. Cygna reviewed two examples of the NPSI models/calculations and found their method acceptable, although one model contained input errors which did not impact the conclusions. Furthermore, as part of their normal design practice NPSI had previously committed to reviewing each welded attachment analysis against the final pipe support loads (refer to Communications Report dated 6/18/84). Thus, Cygna considers the approach acceptable.

3. Local Stress Effects

In reviewing the pipe supports for Phase 3, Cygna noted many instances of the following:

a) Use of wide flange or back to back channels without stiffener plates at connections and without calculations to show the joint is acceptable.

b) Use of tubesteel in frames without checking whether the webs of the tube are adequate to transmit the load, especially when the end is a load transfer point.

c) Use of composite sections, made up by welding a plate to a tube section, without considering the additional stress in the weld at the load transfer point **(see Observation PS-07)**.

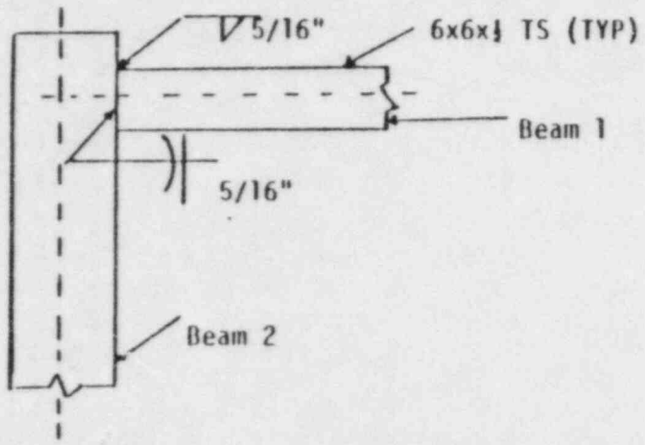
It is important to note that Cygna did see instances where each of these items were properly considered, either by calculation or good design practice. In response to Cygna's question on project guidance in this area, TUGCO stated in a 6/8/84 letter:

> "Although the various design guidelines may not require that specific calculations be performed on structural connections the effects of localized stress are often evaluated with approximate calculations. The individual design engineer assesses each situation on a case-by-case basis. From his inspection, he may judge the effects negligible or may add gussets or stiffeners; or he may elect to calculate the actual stresses and determine if there is a necessity for stiffening. In all cases, however, the designer is guided by the limits set forth in subsection NF and specification MS-46A. It has always been a matter of good engineering practice to make these considerations. It is not industry practice to provide guidelines to engineers for these considerations, nor is it necessary."

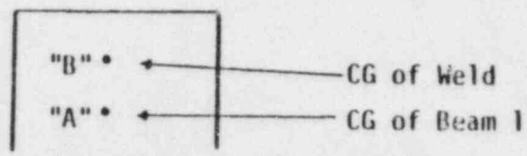
Cygna has reviewed each design in Phase 3 for the acceptability of the engineering judgment noted. In certain cases, Cygna was able to confirm that judgment since the applied loads were small. In other cases, Cygna performed their own calculations to determine the adequacy of the joint. In no case did Cygna find a design error, i.e., each joint would transfer the applied loads. It is the lack of calculations or notes in the design calculations that has caused Cygna to make this comment. Without at least a statement such as: "connections OK by judgment", Cygna had no way of knowing whether certain joints had been checked or not. Conversely, if stiffeners were added to a joint without calculations, Cygna had no means of determining that the stiffeners were properly designed, without performing our own calculations. Thus, while the lack of calculations in this area made the review more difficult, Cygna did not find any instances of overstress due to inadequate engineering judgment.

4. 3-Sided Welds

In certain connections, Cygna noted the use of 3-sided (see sketch) welds used to transfer the loads from one member to another. In most instances, the designer did not transfer the loads from the center of gravity of the beam (Point A) to the center of gravity of the weld (Point B). It is TUGCO's position that the designers use engineering judgment in determining if the effect will significantly impact design. That is, if the stress levels are low, the designer does not transfer the loads. For Cygna's assessment, see Observation PS-05.



Weld Detail

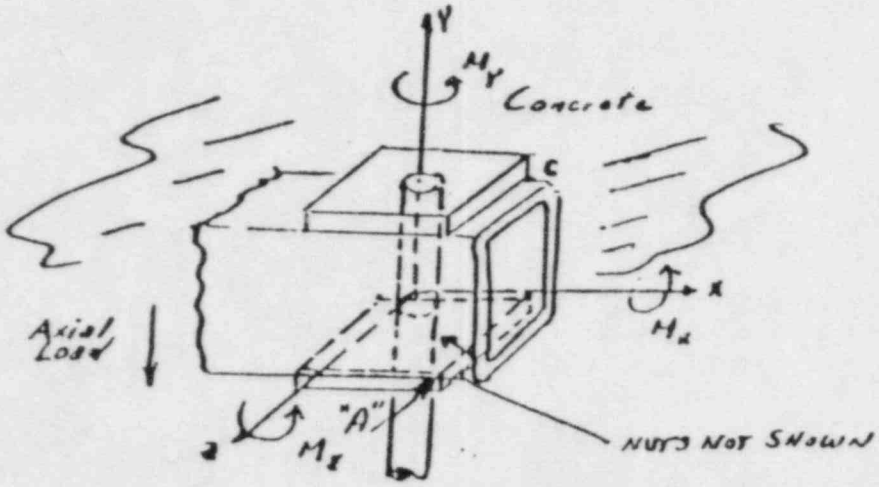


5. Use of .6Fy for U-Bolts

In designing the larger, non-standard U-bolts (i.e., 2-3/4" diameter rods, 2-1/4" diameter rods), the pipe support organizations have used an allowable tensile stress of .6Fy; actual bolt stresses were based on the tensile area of the threaded region. This conforms with the ASME Code Section III, Appendix XVII, Paragraph XVII-2211. In order to provide further justification for this procedure, ITT Grinnell performed a test program for 1/2" diameter and 1" diameter U-bolts (Reference Attachment to TUGCO letter dated May 2, 1984). Based on the results of those tests, ITT has shown quite clearly that .6Fy is an acceptable tensile stress allowable for U-bolts.

6. Tubesteel Prying on Richmond Inserts

In the designs which employ tubesteel/Richmond insert combinations, Cygna noted that the engineer released the rotation about the Y and Z axes (see sketch) in the STRUDL model for the frame. While release of the Y rotation is appropriate since the bolt is free within the tube, release of the Z rotation assumes that the tube will not bear against the washer at point "A" and create a load due to prying on the bolt. TUGCO has provided justification for this and other analytical assumptions (i.e., the bolt does not carry any load in bending; the effect of bolt hole offset on bolt load) by performing both testing and analysis. Details of the justification may be found in the TUGCO letter dated 5/8/84 and in the "Affidavit of John C. Finneran, Jr., Robert C. Iotti and R. Peter Deubler Regarding Design of Richmond Inserts and their Application to Support Designs." In the letter to Cygna, TUGCO shows that prying due to rotation about the Z axis is not present when only vertical loads exist. When torsional moments (M_x) exist, the study done by TUGCO shows that even with small amounts of torsion (1000 in-lb vs 40000 lb tension load), the effect of prying is due to torsion, with no contribution from moments about the Z axis. For large torsional loads (4000 in-lb vs. 2000 lb tension), the same effect holds true. Cygna then reviewed all tubesteel/Richmond insert joints within their scope and determined that the configuration analyzed by TUGCO (4 x 4 x 3/8 TS with 20" bolt spacing) is representative of the most flexible configurations and, therefore, most conservative. As a result, Cygna finds the method used by TUGCO to model these connections is acceptable.



7. **Support Self-Weight Excitation**

As Cygna found in the Phase 2 review, the design organizations at CPSES do not usually consider additional support load due to the seismic excitation of the support mass in the unrestrained direction. In the case of simple support combinations, such as clamps, struts, and base plates, the effect is minimal since the mass is very small. In the case of frames, Cygna has found some examples where self-weight excitation was considered, usually by applying 1.0g in all 3 directions. However, this practice was not commonly employed in the supports which Cygna reviewed. Since the issue of self-weight excitation has been raised and reviewed by the NRC (reference the NRC SIT Report, Item 3h), Cygna did not perform any additional technical evaluations. Cygna did note that the mainsteam supports inside containment involve fairly massive frames, although the applied loads are already sufficiently large such that the added effect may be minimal.

8. **Effect of Support Stiffness**

As noted in the Phase 2 Cygna Report, the design organizations do not calculate actual support stiffnesses for Class 2 and 3 piping systems. Rather, they limit deflections of frames to 1/16" and do not consider the deformation of standard components, such as struts, clamps and snubbers, or the base plates. Since the effects of support stiffness on the piping analysis has been raised by the NRC (the NRC SIT Report, Item 3j), Cygna did not perform a technical evaluation of this concern other than to note it is necessary to consider the effects.

9. **Cross-Sectional Properties for Tubesteel**

In the review of pipe supports, Cygna noted that two of the pipe support design organizations, NPSI and ITT Grinnell, use cross-sectional properties for tubesteel from the AISC Manual, 7th Edition. Another design organization, PSE, uses the properties from the AISC Manual, 8th Edition. When Cygna questioned the apparent inconsistency, TUGCO referenced the "Affidavit of J.C. Finneran and R.C. Iotti Regarding CASE's Allegation Involving Section Property Values." As explained in that filing, the tubesteel at CPSES is A500 GRB, cold-formed, for which the section properties from the 8th Edition of the AISC Manual are more appropriate. The differences in section properties between the two editions are minor and have negligible impact on design. As further noted in the TUGCO response to Cygna (TUGCO letter 6/8/84), TUGCO will issue a DCA to specification 2323-MS-46A to note this exception to the AISC 7th Edition. Cygna considers this question adequately addressed and the matter closed.

10. **"Cinched" U-Bolts on the Component Cooling Water System**

In reviewing the pipe supports for the Component Cooling Water System, Cygna noted a number of instances where a U-bolt is tightened around a pipe to provide stability for the support. Cygna asked TUGCO to provide justification that the U-bolt would not be overstressed. In response to Cygna's request for one example, TUGCO provided calculations in their 6/8/84 letter and subsequently revised them on June 18, 1984. Cygna has reviewed the TUGCO calculations and agrees that there will be no adverse stress effects in the U-bolt for the component cooling water systems. For the pipe, see Note 12, which discusses the Westinghouse test and analysis program for U-bolts.

11. **Rear Bracket Dimensions**

In reviewing the designs at CPSES, Cygna used the certified vendor catalog and load data available at the site. In Revision 17 of the Design Report Summary (DRS) for rear brackets (ITT Grinnell), Cygna noted dimensions which did not agree with those used by the support designers. The use of larger dimensions would affect weld lengths and, therefore, design. As explained by TUGCO in their 6/8/84 letter, Revision 16 of the DRS is the appropriate revision for the dimensions since the majority of the brackets were purchased prior to the issuance of Revision 17 in April, 1983. TUGCO provided Cygna with a copy of Revision 16 and Cygna verified that the dimensions used correctly correspond to Revision 16. To further confirm the appropriate dimensions, Cygna measured rear brackets in those supports chosen for a latter walkdown and confirmed that the installed bracket dimensions are the same as those in the DRS revision used by the designer. Based on the outcome of that walkdown, Cygna considers this matter adequately addressed.

12. **"Cinched" U-Bolts: Effects on Piping, Stability, and the U-Bolt**

In reviewing supports on the Main Steam and other systems, Cygna noted instances where a U-bolt was tightened around the pipe. This was typically done by TUGCO to provide stability for the support by having the U-bolt act as a clamp. Cygna asked TUGCO if the local stresses in the pipe and the additional stresses in the U-bolt had been considered during the design process. In response to this same question by the ASLB, TUGCO had contracted Westinghouse to perform a test/analysis program. The details of this program are described in Westinghouse letter EQ&I-EQT-737, dated 3/5/84.

The objectives of this test/analysis program were to ensure that:

1) Stress levels in the U-bolt remained within acceptable limits;
2) Stress levels in the piping remained within acceptable limits;
3) Stress levels in the crosspieces remained within acceptable limits;
4) The U-bolt would maintain the support in a stable configuration (i.e., would not slip) under maximum allowable strut/snubber angularity (5°);
5) The U-bolt would maintain its stability characteristics over time (i.e., would not relax).
6) The U-bolt would maintain its stability characteristics under normal vibration loading.

As part of the program, TUGCO selected the following piping:

a) 4" sch 160 (stainless) with temperature = 559°F
b) 10" sch 40 (stainless) with temperature = 210°F
c) 10" sch 80 (carbon steel) with temperature = 210°F
d) 32" with T = 1.25" (carbon steel) with temperature = 557°F

These represent a broad range of piping and material combinations at CPSES and would provide assurance that the worst combination of wall thickness, pipe size, and temperature effects have been considered.

At the time of Cygna's review, only preliminary results from this study are available (reference, EBASCO letter dated 6/15/84 from R.C. Iotti to N.H. Williams). Cygna is continuing with an evaluation of this design and will make the results available at a later date. Cygna considers this an open item in this Phase 3 report and finds all supports utilizing "cinched" U-bolts acceptable contingent solely upon the acceptability of that test/analysis program. A list of those supports utilizing "cinched" U-bolts for stability is provided below:

Support Number	Checklist No.
CC-1-020-001-A33K	PS-009
CC-1-028-007-S33R	PS-017*
CC-1-028-701-A33R	PS-036
MS-1-001-003-S72R	PS-069
MS-1-001-004-S72R	PS-070
MS-1-001-005-S72R	PS-071
MS-1-002-003-S72R	PS-082

Support Number	Checklist No.
MS-1-002-005-S72R	PS-084
MS-1-003-003-S72R	PS-099
MS-1-003-004-S72R	PS-100
MS-1-003-005-S72R	PS-101
MS-1-004-003-S72R	PS-119
MS-1-004-005-S72R	PS-121

* Support design revised per TUGCO letter 6-8-84.

13. Embedded Plate Design

During the review of supports attached to embedded plates, Cygna noted that in most cases the designers assume a fixed joint at the embedded plate. The governing criteria in Appendix 4 of G&H Specification 2323-MS-46A states that the connections to embedded plates shall be assumed "pin" joints (i.e., forces only, no moments) unless stiffeners are provided, but no guidelines are given for these stiffeners. The standard procedure at CPSES is to assume that the attachment to the plate, usually a beam or base plate, provides the stiffener for the embedded plate. The moments are then distributed to the bolts using a conservative estimate for the dimension of the attachment. Also, in these cases, the lower allowables for the embedded plates are used. Cygna did find a case in which TUGCO performed a finite element analysis of the connection to the embedded plate, when their initial approach was too conservative. Based on Cygna's review of the design of connections to embedded plates, we find the approach acceptable.

14. A563A Nuts with High Strength Bolts

In certain supports at CPSES, Cygna noted the use of A563 grade A nuts with high strength A193 B7 thru bolts. The ASTM specification states that A563 grade A nuts are suitable only for low strength A307 bolts, based on a comparison of yield and ultimate strength data. TUGCO has stated that their standard practice is to use A194 2H nuts with A193 B7, but they do allow the use of double A563 grade A nuts, since they will have sufficient strength to ensure the acceptability of the joint. Also, all nuts are tightened "snug tight", thus ensuring both nuts will share the load. In all supports within the Cygna scope, CPSES designers did use double nuts wherever A563 grade A nuts were specified for A193 B7 bolts. Thus, the bolted joint design is acceptable.

15. 1-1/8" Bolt Holes Used in Base Plates with Hilti Kwik-Bolts and in Tubesteel with Richmond Inserts

Paragraph NF-4721(a) of the ASME B&PV Code, Section III, provides guidelines for the fabrication and installation of bolting. In it, the Code allows 1/8" oversize bolt holes to be used with 1" bolts made from low strength (yield ≤ 80 ksi) material. Since the tubesteel/Richmond insert combinations seen by Cygna use A36 threaded rod (yield = 36 ksi), this provision is met. Hilti Kwik bolts, however, have a yield greater than 80 ksi, so, in the absence of manufacturer's guidelines, paragraph NF-4721(b)-1 should apply. This paragraph does not prohibit the use of oversize holes with high strength bolting. As noted by TUGCO in their 6/8/84 letter, this interpretation was agreed to by both the CPSES constructor and the authorized nuclear inspector. In addition, the Hilti Product Management Brochure for Hilti installation states that the wedge clearance hole in a base plate should be 1.17" for 1" bolt, to facilitate installation. Therefore, the use of 1-1/8" holes for Hilti bolts does meet the manufacturer's guidlines. Based on the above, Cygna concurs with the bolt hole diameters used at CPSES.

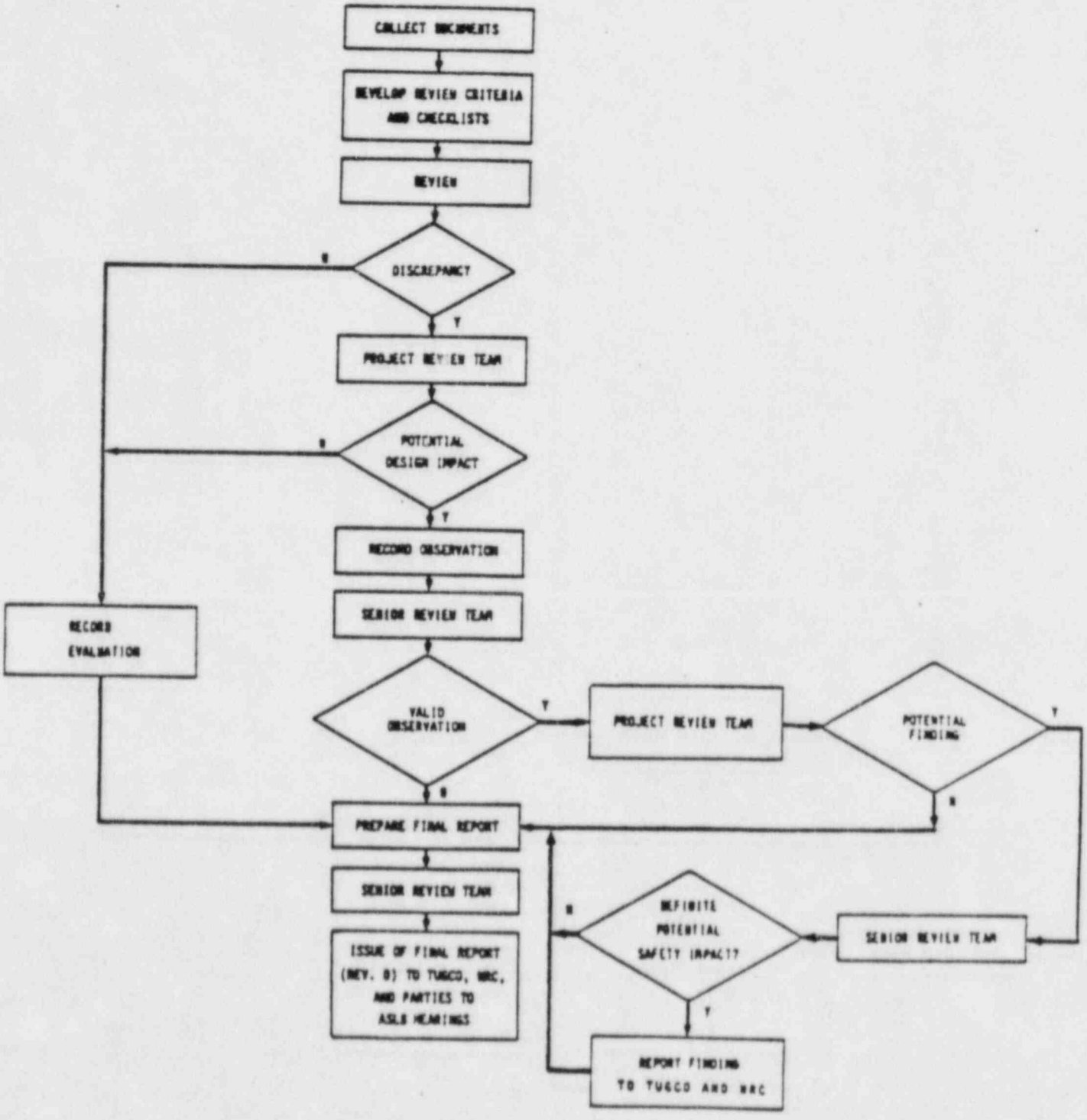
16. Box Frames with 0" Gap

In the Phase 3 support review, Cygna noted rare instances where a box frame was used with a strut in place of a pipe clamp. In these cases, the drawing specified a 0" gap between the pipe and frame. Cygna asked TUGCO to evaluate the stresses in the pipe and frame, due to thermal expansion of the piping. In response to this and a similar question from the ASLB, TUGCO performed calculations on these Component Cooling Water frames; these calculations show that additional stresses in the pipe are less than 10 ksi and that additional support loads are less than 500 lbs. Since the loads are thermally induced and, therefore, self-limiting, both of these additional effects are well within Code allowables for self-limiting loads. Cygna has reviewed the TUGCO calculation (Attachment B to the TUGCO 6/8/84 letter to Cygna) and concurs with the conclusions in that calculation.

17. U-Bolts Used on Trapeze Supports

In a number of trapeze supports reviewed in Phase 3, Cygna noted the use of a U-Bolt to keep the pipe positioned on the frame. In these cases (typically spring supports), there is no upward load on the U-bolt. In effect, the U-bolt is not needed as a load carrying member, but only to keep the pipe in place on the trapeze beam. In these cases, Cygna has referenced this note on the checklist to help explain the U-bolt's function.

IAP Process Overview



GENERAL NOTES TO PIPE STRESS CHECKLIST

1. Effect of Support Mass on Pipe Stress Results

In reviewing problems AB-1-69 and AB-1-70, Cygna found that Gibbs and Hill did not include the mass of hardware attached to the pipe in the pipe stress analysis. This has not been noted as an observation since the decision to include the support mass in the stress analysis varies according to design organization, policy and the judgment of the individual analyst. Some organizatons do include it in Class 1 analysis but not in Class 2 and 3. Cygna is not aware of any criteria available to the industry for the purpose of determining whether to include the support mass. In response to questions raised during the ASLB hearings, Cygna did rerun a portion of the RHR system between the pump and heat exchanger. This study included the added mass of all pipe supported hardware. Cygna's results show that the effect on natural frequency and pipe stress is small. The effect on support load is somewhat larger. However, this study did neglect the effects of the damping allowed for supports and of the true distribution of support mass. Based on this study, it remains Cygna's position that the effect of support mass on pipe stress results is not a significant factor.

2. Effect of Dual Supports on Piping and Support Results

In reviewing the pipe stress analyses, Cygna noted supports formed by welding two trunnions to the pipe and attaching a strut or snubber to the end of each trunnion. This arrangement can introduce some additional rotational restraint in the piping system, if one neglects the effect of any gaps in the support hardware. In the analysis, Gibbs and Hill had not modeled any rotational restraint at these points. Cygna does not believe this is incorrect and has seen both methods employed in the industry. One method is not necessarily more appropriate or conservative than the other. Each yields reasonable stress results. Loads in the remodeled support may increase; however, loads in other supports may decrease when the rotational restraint is added. Pipe stresses may increase or decrease with rotational restraint. Cygna believes the Gibbs & Hill approach is reasonable.

GENERAL NOTES TO PIPE SUPPORT CHECKLISTS

1. Use of U-Bolts as Pipe Clamps

In the review of the supports for problems AB-1-69 and AB-1-70, Cygna noted instances where a U-bolt was used in place of the standard pipe clamp. Since Cygna had not reviewed the installation procedures for these U-bolts, Cygna did not consider that the pretension of the U-bolt would be significant. Since Cygna's reviewers had judged the effects to be small, Cygna did not assess stresses in the pipe due to such pretension.

As a result of information made available at the ASLB hearings, Cygna has determined that the amount of pretension can be significant, depending on the thickness and size of the pipe. Cygna is currently reviewing a detailed test/analysis performed by TUGCO to determine the overall effects of this use of U-bolts. Cygna will issue their findings when that review is completed.

2. Local Effects in Tube Walls

In the supports reviewed, Cygna noted instances where either a support bracket is welded to a tube, or two tubes are welded in a "T" fashion (stepped tube). In most cases, the punching shear on the tube wall was not checked explicitly. Cygna independent calculations show this is not of concern, since the tube wall must be equal to at least the fillet weld size. In addition, Cygna did not find any instances wherein the local flexibility of the tube wall was included in a stiffness calculation. However, Cygna also believes the effect is small in comparison to the overall flexibility in the support. In addition, Cygna believes it is accepted practice not to consider such detail in standard support design. Thus, Cygna has found TUGCO's design approach to tube steel acceptable per Cygna's criteria.

3. Effect of Support Dead Weight

As a matter of general practice, the TUGCO pipe support design organizations do not include the weights of standard components (struts, snubbers, clamps, etc.) in their pipe support design calculations. They do, however, include the weight of frame members when using the Strudl program to perform frame analysis. While general purpose structural design codes do specify that dead load shall be considered in the design of structures, the significance of the various components of dead load in the design of a structure varies with the type of structure. In the case of a piping system, dead load is considered in the design of pipe supports. This includes the piping dead weight and the weight of all material attached to or integral with the piping, such as insulation, valves, etc. Since the dead weight of the pipe support itself is generally very small compared to the piping dead load, thermal load and seismic load for which the support is designed, it is neglected. Cygna believes that neglecting this specific component of dead load (i.e., support dead weight) is also consistent with standard practice.

4. Effect of Pipe Radial Expansion on Anchors and Frames

In designing supports with 0" gap box frames and with trunnions welded to the pipe to form anchors, the TUGCO design organizations do not include the loads due to pipe radial expansion in the support design. These loads, being induced by imposed displacement, are secondary in nature and would be compared to three times the normal allowable from the ASME Code (paragraph NF3213.10 and NF3231.1a of Section III). Cygna has performed calculations on a number of these configurations (SI-1-325-002-S32R and SI-1-037-005-S32A, for example) and found stresses within acceptable limits. It is Cygna's position that these effects have no impact on design.

5. Effect of Bolt Hole Size on Bolt Shear Distribution

In designing baseplate/bolted connections for the CPSES pipe supports, the TUGCO design organizations assume all bolts equally share the shear load in a bearing connection. This assumption is consistent with standard design practice throughout both the standard and nuclear construction industries. In response to questions raised during the ASLB hearings, Cygna has performed calculations which show that the effect for a 1" bolt with a 1/8" oversized hole in a 4 bolt baseplate under the most adverse condition is a 4% reduction in safety factor. Thus, Cygna has shown that, while the conventional method does not provide rigorously exact results when compared to nonlinear analysis, it provides an adequate basis for design.